

EPN-TAP Services

Published services can be reached from the VESPA portal [service result page](#)

Implementation notes: [Data service maintenance section](#)

Service definition files are preserved here (log in first): <https://voparis-gitlab.obsmpm.fr/vespa/dachs/services>

| Short Name | Name | Description | Location | Status | To do (v1 or v2) | Comments | Version_2 / updates | Gitlab backup? |
|--------------------|--|---|------------|---------------|--|---|--|---|
| Atmospheres | | | | | | | | |
| Titan_profiles | Vertical Profiles in Titan Middle Atmosphere | Atmospheric profiles of Titan from Cassini/CIRS | PADC/LESIA | ONLINE | Check descriptions Enlarge contents Remove duplicates! TAP parameters reviewed Rewrite with mixin (required to fix coord UCDS) Correct existing file names Added new series of profiles from C. Mathé Update of older files scheduled ~ mid 2020 - refined inversion method, either as replacement or addition, TBD | New data provided end 2019 Formerly called Titan | Updated to v2 in 2016, to be tested again Mixin version installed Jan 2020 Enlarged with new data, May 2021 (x2.5 content) | voparis-gitlab — beware that older Titan service is also present there! |

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| VVEx | VIRTIS on Venus-Express: standard dataset | Access to spectral cubes. Venus-Express legacy nb of granules : ~ 50,000 calibrated/geometry files + possibly derived products (maps, profiles, etc) | PADC/LESIA | ONLINE | <p>Complete data description with geometry, enlarge to the complete dataset. Intended as a demonstrator of both EPN-TAP access to the PSA, and data handling / distribution system in a PI team for an experiment in operation phase (would replace the Otarie /ION system in Meudon for data access).</p> <p>In the mid-term, this could include derived products, which are not in the PSA.</p> | <ul style="list-style-type: none"> v1 addressing part of nominal mission, limited nb of parameters + some inconsistencies First v2 version for nominal mission (2016), param from archive INDEX - still does not use the mixin. June 2020 version: uses the mixin and get data from the PI database. One part of geometry missing, still to be recovered entirely. Also need to work on footprints. Prospects: <ul style="list-style-type: none"> May include cruise phase, which is not in the PSA? That would require to make the files available somewhere (could be the PSA extra area?) | v2 update from Toulouse 2016 workshop (demo) - waiting to retrieve last parameters (geometry) | voparis-gitlab (should be reorganized in branches) |
| VVEx+ | Enhanced VIRTIS dataset on Venus-Express | Will provide access to individual spectra. Venus-Express legacy (after discussion: same service as above, not a separated one). Possible issue: this would include ~ 10E9 entries. Ingestion via DaCHS is nearly impossible (3h for 5E6 spectra) | PADC/LESIA | PLANNED | <p>Enlarge the above service to also provide description of VIRTIS/VEEx individual spectra with geometry parameters. Access may be a script extracting the corresponding data from the cubes (possibly in APERICubes, TBC). This will have a noticeable added value wrt a similar service from the PSA, only possible in the PI team.</p> | <p>Big issue with ingestion time - this is prohibitive with DaCHS. Need to import table through postgres?</p> | | voparis-gitlab |
| abs_cs | Absorption cross sections | Absorption cross sections for gaseous species of atmospheric interest | IAA-CSIC Granada | ONLINE | <p>Finalize, declare, add data + setup special access script (output selected species in a single table)</p> | Still DaCHS v1 | First model in v2 from Toulouse 2016 VESPA workshop | |

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| SOIR | SOIR /SPICAV /VEx | UV / IR observations of Venus - vertical profiles | Royal Belgian Institute for Space Aeronomy / Planetary Aeronomy | ONLINE | Convert profiles to VOTable, easier to handle and visualize. | Convert to mixin version | First model in v2 from Toulouse 2016 VESPA workshop Updated for DaCHS2 in 2021 | voparis-gitlab |
| SPICAM | SPICAM / MEx | Vertical profiles of Mars May be coupled with ACRI-ST project in EPN2024, including a visu tool on a web page. | LATMOS | ONLINE | Number of issues identified afterwards , including extra table not integrated. 2021 update to be reviewed | First simple / complete datalink example. Provides links to MCD simulation + ascii version of the profile. Convert to DaCHS2 | v2 direct from Toulouse 2016 workshop. Update from Prague workshop, 2018. New update 2021 , with direct links to simulation; v2 compliant. | voparis-gitlab |
| SPICAV | SPICAV / VEx | Vertical profiles of Venus | LATMOS | PLANNED | From updated SPICAM service | | | |
| mcd | Mars Climate Database | Sampled version through EPN-TAP | PADC + LMD | ONLINE | First version on sampled data, access to vertical profiles only, reviewed. Issues fixed later on | Add daily cycles and maps (in another service)? Add more scenarios. In a second step, direct access through workflow will be studied (OK via datalink) Profiles contain all species/dust (to limit the # of granules) Convert to DaCHS2 Issue with access time to be solved | v2 installed from Toulouse 2016 VESPA workshop Update from Prague workshop, 2018. New update in 2021; DaCHS v2 compliant, more scenarios + datalink | voparis-gitlab |
| Mars_dust | maps of opacity from Mars Climate Database | Sampled version through EPN-TAP | PADC + LMD | ONLINE | First version on sampled data, access to vertical profiles only, reviewed. Issues fixed later on | Fix issue with Ls vs Martian sols in cubes | In 2021; DaCHSv2 compliant | voparis-gitlab |
| VCD | Venus Climate Database | Sampled version through EPN-TAP | PADC + LMD | ONLINE | First version on sampled data, access to vertical profiles only, reviewed. DaCHS2 compliant | Profiles only Less granules, no Ls sampling. Scenarios for UV flux and cloud albedo patterns | In 2021; DaCHSv2 compliant | voparis-gitlab |
| GEM_Mars | | Another Mars GCM | IASB-BIRA, Trompet | ONLINE | vertical profiles | Difficulty with ingestion through DaCHS | | voparis-gitlab |
| OMEGA / MEx atm db | | | LESIA, Melchiori | IDEA | Exhume data, if possible | Only covers beginning of mission. Science value to be assessed first | | |

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| Titan GCM db | | | | IDEA | <p>Oct 2016: P. Rannou suggests to contact S. Lebonnois for his more modern 3D code.</p> <p>Alt, 2020: the team is building a db of precomputed profiles - could be distributed as a data service</p> | <p>Only available as a code for the time being, no interface.</p> <p>May be a candidate for integration on a code-on-line platform.</p> | | |
| VIMS_satellites | | VIMS/Cassini calibrated cubes, satellites only Catalogue of cubes with description, thumbnails, links to PDS raw and ISIS3 calibrated cubes + possibly geotiff format | Benoît Seignovert (LPG /GeoPlanet + PADC) | ONLINE | From csv files, with link to web site pages. | Installed in ObsParis for maintenance reasons, grabs data in Nantes | Indicated by P. Rannou at EPSC 2018, OK from C. Sotin | voparis-gitlab |
| Small bodies | | | | | | | | |
| BaseCom | The Nançay Cometary Database | Radio observation of comets from Nançay | PADC/LESIA S. Erard with J. Crovisier | ONLINE | <p>Restructure with mixin, clean up, check parameters and UCDS (not yet published)</p> <p>Deep review in spring 2019: spectra, thumbnails, granule list (remove duplicates & identify upper limits when no detection)</p> <p><u>Big update 2021:</u></p> <ul style="list-style-type: none"> • All fits & thumbs rebuilt from txt files, in velocity <ul style="list-style-type: none"> • removed low level data • Cleaned up upper limits • added recent observations (15 yr of data) | <ul style="list-style-type: none"> • Still uses the initial parsing system of all files and tables, all further steps now integrated in a single IDL routine producing a csv file • freq_min and max to be cleaned up — but two spectral ranges added, hence... • Pending review with science team, but should be OK • Add ephemeris in table? | <p>Updated to EPN-TAP v2</p> <p>Needs update to DaCHS 2.5</p> | voparis-gitlab |

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| M4ast | Modeling for Asteroids | Asteroid spectroscopy | PADC / IMCCE | ONLINE | <p>Check descriptions, update VOTable format / script, add thumbnails</p> <p>2019: Update with new content Add import script on crontab Other small things to fix, in particular VOTable conversion script</p> | <ul style="list-style-type: none"> • March 2019: rebuilt with mixin + restored data loss. • March 2019: frozen in July 2015 (still there in May 2021) | updated to v2. | voparis-gitlab |
| NASA dust catalog | INAF-IAPS RDB NASA dust catalogue TAP service | NASA's Cosmic dust catalogs 15 and 18 | IAPS, Rome | DRAFT | <p>Restructure, Check descriptions, Update server.</p> <p>Added thumbnails and spectra when available.</p> <p>Update presentation on web page, the current one is missing!</p> <ul style="list-style-type: none"> • Data and thumbnails out of reach (July 2019)? | <p>Must be reinstalled on OATS DaCHS server</p> <p>Need to clean up registry: There are still 2 declarations of the same service in the registry!!!</p> <p>+ Revive associated data (images & spectra)</p> | v2 linked to the portal after Prague workshop, registered properly in July 2018, removed later (Rome server is down) | |
| IKS | IR spectroscopy of comet Halley | IR spectroscopy of 1P /Halley (IKS / Vega-1) | PADC/LESIA | ONLINE | <p>Check descriptions, add phase angle Add thumbnails</p> <p>To be rebuilt with mixin & grammar</p> <p>Add better thumbnails!</p> | <p>Descriptors updated April 2016, new web page Sept 2017.</p> <p>Updated to mixin /grammar, Dec 2017, then small updates</p> | First v2 test case (old way). | voparis-gitlab |
| TNOsarecool | TNOs are cool | Compilation of TNOs properties + Herschel /Spitzer observations | PADC/LESIA | ONLINE | <p>Make it consistent with M4ast, MPCOrb and DynAstVO.</p> <p>Check some parameters</p> | Classes of small bodies still to be refined | v2 direct | voparis-gitlab |

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| Illu67P | Illumination maps of 67P/C-G | Shows the comet illumination for a given lat/lon of the Sun in the comet frame. Next step: shows the comet illumination for a given time | IRAP + Imperial College, London. A. Beth | ONLINE | Finalize, add data, declare. Identify correct dataprodu ct_type, see if extra param are required for sub-observer point. Handle 3D format? | | Directly in v2 from Toulouse 2016 VESPA workshop | |
| 67P units | Description of morphologic units from OSIRIS images | Identify latest version | | IDEA | Difficulty related to coord - lon/lat won't work, Cartesian required. | Main info is s_region contours, won't work in Cartesian coord. Use for unit characterization, e.g. thermal properties | | |
| DynAstVO | | Minor Planet parameters and orbits, with daily computation (NEO only) | IMCCE / PADC | ONLINE | Add computed orbits as spice files, open in Cosmographia or similar. Enlarge to other objects (MBA)? Register Updated in Aug 2018 (missing param, updates, kernels) | Spice kernels are usable in Cosmographia (manually on user's end) and 3Dview (if they are installed on the server part) | Directly in v2 from computation results | voparis-gitlab |
| MPC | Minor Planets Center | Asteroid orbital and physical parameters | MPC / IAU, + Heidelberg /Paris | ONLINE | Provide epn_core view on existing TAP service in Heidelberg Check if monthly updates still active • Check parameters + change encoding of names (with no number) Fix date format | First experiment with EPN-TAP2 mixin Still to be refined in 2022. | Make consistent with other small bodies services | |
| CEMLS | Cometary emission line catalogue | Comet line catalogue, from observations | IAPS, Rome | DRAFT | Provides band list with reference. Make it SLAP or LineList compliant? | | | |
| BDIC | Base de Données d'Images Cométaires | | PADC/LESIA, F. Henry | PLANNED | To be adapted from updated BDIP v2 | | | |
| SBNAF | Small Bodies Near and Far | Catalogue of asteroids properties, from IR observations (H2020 programme) Initially ~ 60,000 obs (several/target) 2019: 170,000 measurements and growing | Konkoly Obs | ONLINE | To be reviewed and finalized Restarted in 2019 from outputs of the native web interface | Make it interoperable with TNOsarecool service + other observational services in EPN-TAP (M4ast, TNOsarecool, DynAstVO...) | VESPA 2018 Prague workshop Finalized Feb 2020 (in EPN2024) | voparis-gitlab (under PADC /planeto for some reason) |

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| Origins | ANR project (France) | ~ 150 spectra of asteroids | PADC/LESIA, S. Fornassier | PLANNED | Build the table Get data files, adjust M4ast conversion routine Should be very similar to M4ast | | Internal to LESIA, 2021 | |
| Comets | Base de données des observateurs de comètes | Amateur site (high level) with > 16000 images (+ some spectra included). Includes db and submission system | PADC/LESIA, N. Biver | IDEA | Simply write an EPN-TAP view with daily updates from existing db? Other similar db to be studied too. | Web version operational (http://esia.obspm.fr/comets) Also includes links to sdd.jpl and MPC ephemeris and properties + db of observers (29 contributors). Basic table is a concatenation of target tables? Includes images + derived quantities and references. | | |
| http://neararthobjects.nau.edu TBC | NEO thermal fluxes / albedos | Spitzer thermal-infrared fluxes of near-Earth asteroid from ExploreNEOs, NEOSurvey, and NEOLegacy (~2000 asteroids). Seems to be this https://arxiv.org/pdf/1906.07284.pdf (TBC) | Northern Arizona Uni, or Lowell Obs? | IDEA | existing site with SQL interface | | In wish list, from M. Mommert ~2017 | |
| hermes://cobss.si/ | Comet Observation database | Table of amateur observations, long and rich | jure.zakrajsek@obscv.si | IDEA | | | Contacted us at EPSC 2018 | |
| PDS SoHO | | Images of Sun grazing comets from the SoHO spacecraft / LASCO instrument The main idea is to test a service with fits images only, and handling in VO tools. This one is a simple test case. | | IDEA | Start from fits dataset in PDS SBN. First check if pointing, etc available (WCS may not be relevant, but helio distance?) | | Suggested by A Raugh, AGU 2018. | |
| MP3C | EPN-TAP access to existing MP3C tables | Small bodies catalogue integrated from sparse on-line db, includes color, spectral types and other things | OCA Nice, M. Delbo / N. Bruot | DRAFT | Relies on TAPIb - interface study by PLS in July 2017; then crashed due to local system and lack of resources. | 13 tables with TAP interface. Try and build a use case from those? Common key is name / SSODnet. 2021: focus on best value table | Graz workshop, 2017, then 2020-21 on-line workshop | voparis-github |
| SPHERE ? —TBC | VLT-SPHERE | | LAM / CESAM, P. Vernazza and L. Jorda | PLANNED | Processed images and shape models of large asteroids from the VLT | Some 10s of fits images + derived 3D shape models | VESPA 2020-21 on-line workshop | |
| MOVIS ? —TBC | VISTA-VHS | | AIRA / Bucarest, M. Popescu | PLANNED | NIR flux from VISTA-VHS | NIR color tables + classification results | VESPA 2020-21 on-line workshop | |
| TNO spectra | VLT large program from ~2005 | | LESIA, Barucci | IDEA | Find calibrated spectra in LESIA, evaluate | | | |

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| Small Main-Belt Asteroid Spectroscopic Survey | SMASS | Binzel et al VNIR spectra of asteroids http://smass.mit.edu/smass.html | MIT with support from PADC? Check if included in MP3C | IDEA | Based on M4ast, very similar data Coupled with "MIT-UH-IRTF Joint Campaign for NEO Spectral Reconnaissance" on the same site. Plots /thumbnails have to be regenerated individually in PNG. | Little local resources | Suggested by Mirel Birlan, discussed in 2018 | |
| † Earn | Earn | Physical properties of (some) NEOs http://earn.dlr.de/nea/table1_new.html Closed: this page no longer exists, the db has been integrated into ESRIN NEO Space Situational Awareness service: http://neo.ssa.esa.int/neo-home (may be accessed through MP3C?) 2020: May be resurrected through NEOROCKS | Paris or Rome? | | Includes a (spectral) taxonomy type. Some duplication of MPC parameters (can be filtered out?) Regularly updated on-line. Related somehow to the NEOshield-2 EU program | Table is easy to enter (note that Binary objects, noted B in 1st column, have 2 entry lines; only the first one is relevant). Each object has a detailed page with extensive biblio that cannot be included in the table - should be linked with external_link parameter) | | |
| NEOROCKS | NEOROCKS H2020 prg | ASI project to provide ASI and ESA data. See presentation at EPSC2020 then PSIDA 2021. | ASI? | DRAFT | | Very autonomous dev, VESPA only provides support | | |
| FRIPON | FRIPON detection network | Database from the FRIPON system. May include detection images, trajectories, orbits, sample analyses, and possibly GRAVE radar periodograms (also used for atmosphere / aerosols studies) | Will be installed in Paris / PADC, curated by IMCCE (data from Marseille) | PLANNED | Test case for fireball detection networks Identified content: - table of events /detection /objects - will include detection from multi or single camera (those for cross-detection with other networks) - include external_link to web site page with detailed info Other data may include (short-term): - VOevent alarm system - meteor showers on Earth: orbits, etc | | Discussed at EPSC 2018. Further discussion June 2021 | |

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| VIRTIS cometary phase | VIRTIS Rosetta | Just provide images and plots of operations / acquisition? This would be a different demonstrator of EPN-TAP service in support to an experiment in operation: <ul style="list-style-type: none"> granules = MTPs or STPs. Link to ancillary images / plots (SE material) - wait for regeneration of overall geometry (in EPN2024)? granules = files. Link to synthetic surface-related images (BR material) <p>The file service can be adapted from VVEx service; wait for final dataset to be accommodated on the PSA?</p> | LESIA / PADC | IDEA | An ST-MOC would be very helpful. Requires s_region first | | | |
| VIRTIS or Rosetta outreach products | VIRTIS Rosetta | Compilation of images, illustrations... available for public outreach. Demonstrator for future experiments | LESIA / PADC | IDEA | | | | |
| LuckyStar | LuckyStar | Stellar occultations by asteroids and satellites, ERC programme. Provides measurements of radii, shapes, albedo, density. Include a compilation of other measurements. | In Brasil? Or LESIA / PADC | DRAFT | To be installed in Brasil ? | | Hand-made, to be discussed with team | |
| spectro_asteroids | spectra of asteroids | Compilation of asteroid spectra from public libraries (similar to spectro_planets), linked to VizieR repo | LESIA / PADC | ONLINE | From several VizieR catalogues, granules are individual spectra (not always /easily accessible from VizieR tables, and not searchable from there) | Link to VizieR fits when available, basic VOTable version computed otherwise; thumbnails computed. EPNCORE parameters retrieved from papers when needed (available tables are often not the ones describing the observations) | | voparis-github |
| Surfaces | | | | | | | | |
| Mars_craters | Mars craters database | Robbin's crater database | JacobsUni | ONLINE | Completed to entire dataset finalize s_region for plots in Aladin Check descriptions Check s_region again (they have changed) | Reworked by Markus, 2020. Test service for MOC footprints To be completed with revised version from GEOPS | v2 direct, with mixin | voparis-github |

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| Mars_craters_Lagain | Mars craters database, Lagain et al 2020 | Robbin's crater database revised | JacobsUni | ONLINE | Still needs adjustments for consistency with Mars_craters | Revised version of bd at GEOPS, paper submitted to Icarus (2019). Untimely published, then removed until publication of paper. Restored 2021 | v2 direct, with mixin | voparis-gitlab |
| Mars_craters_hires | | Craters with diam > 40 m from HIRISE images, equatorial regions only | JacobsUni? | IDEA | 17M craters! Need to check access speed | Try and synch with publication, end 2019? | | |
| USGS_WMS | Planetary maps from USGS | EPN-TAP access to WMS server | JacobsUni | ONLINE | Check data access Check descriptions | Model for GIS-VO bridge (WMS) | v2 direct, with mixin | voparis-gitlab |
| planetServer_CRISM | CRISM /MRO cubes | Imaging spectroscopy of Mars, WMS access (planetServer version) | JacobsUni | ONLINE | Check data access Check descriptions Description agreed with PDS geosciences, 2019 Completed to entire dataset (again) Remove wvl parameter ? Add a file via datalink | Model for GIS-VO bridge (WCS) and QGIS plugins (working in May 2017) Changed name according to review board request, 2019 (formerly CRISM) | v2 direct with mixin from Toulouse 2016 workshop, then updated | voparis-gitlab |
| hrsc3nd | HRSC/MEX nadir images of Mars | HiRes imaging of Mars, WMS access > 4000 images, nadir only, complete coverage @10 m resolution | Frei Univ, Berlin (Sebastian Walter) | ONLINE | Provide coefficient for calibration in radiance and reflectance Provide min/max viewing angles ? | Uses mixin + PDS grammar | From Roscoff 2017 surface workshop | |
| planetServer_M3 | M3 / CHANDRA YAAN-1 cubes | Imaging spectroscopy of the Moon, WMS access (planetServer version) | JacobsUni | DRAFT | Finalize, ingest (many) data Description agreed with PDS geosciences node, 2019 | Changed name according to review board request, 2019 (formerly M3) Off-line after publication, TBC | Partial version on-line, Jan 2018. Then unpublished because of a server issue, unclear (on planetServerside?) | voparis-gitlab |
| Planmap | Geological maps from the Planmap H2020 programme | Maps with annotations, often in pdf, with contours and rasters. | JacobsUni | ONLINE | Final review. Need to identify data products | | | voparis-gitlab |
| Pangaea-X | Pangaea-X 2017 data | Various measurements on planetary analogue environment | JacobsUni | DRAFT | Finalize, ingest other data | | First assessment with drone images, model for TA field campaign data. | |
| AMADEE18 | Analogue mission to Mars in Oman | Analogue mission to Mars in Oman. Field study, should be – similar to Pangaea-X | gernot.groemer@oewf.org nina.sejkora@oewf.org | IDEA | | | Contact at EPSC 2018 through A. Frigeri. Declined workshop in 2019 | |
| omega_cubes | Imaging spectroscopy of Mars | OMEGA/MEx spectral cubes in calibrated format. Non-PDS files (IDL binaries) | IAS/PSUP | ONLINE | Review details, optimize format | | VESPA 2018 Prague workshop | |

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| omega_maps | Mineralogy spectroscopy of Mars | Mineralogical maps from OMEGA analysis, fits format | IAS/PSUP | ONLINE | Review details Optimize format | HiPS version of OMEGA maps available from Aladin tree | VESPA 2018 Prague workshop | |
| Dawn VIR | Imaging spectroscopy of Vesta and Ceres | Dawn/VIR spectral cubes of Vesta and Ceres (data only, no geometry available) | IAPS/Rome + ASI | DRAFT | Review details Identify ivolD of provider | Provides labels through datalink | | |
| Lunar craters | Largest lunar crater db | From Öhman 2015? | PADC | DRAFT | (exercice in DaCHS for François) | Waiting for original providers to agree on publication | | |
| Various db from Brown University | | see here http://www.planetary.brown.edu/html_pages/data.htm | | IDEA | Provide as list of catalogues? | | | |
| IRS / Mariner 6/7 obs of Mars | | Spectroscopy of Mars | | IDEA | Convert data files to integrated VOTables & add to PDS3 native format (like IKS) | Older/historical dataset... but seems unique and only distributed on a personal web site. Then, it's PDS3... | | |
| ISM / Phobos-2 | | Imaging spectroscopy of Mars | | IDEA | PDS3 labels to be split? | Older/historical dataset... but only distributed on a lab web site (IAS). Then, it's homemade PDS3... | | |
| Mars Pre-Tharsis | Mars topo simulations | Simulated maps | GEOPS (installed on IPSL / ESPRI) | ONLINE | In 2021; v2 compliant | Only 2 maps | | voparis-gitlab ? |
| Catalogue of planetary maps | Historical maps of all kinds | https://planetarymapping.wordpress.com/ => http://planetarymapping.elte.hu http://www.europlanet-eu.org/european-planetary-mapping-a-worldwide-historical-view-of-our-solar-system/ | | DRAFT | From an Xcel file, parsing is difficult but feasible. Include extra images and photographs. To be finalized | Many different formats, including archived web pages; each entry has many images. | Forwarded by Nigel after EPSC 2018 Press notice. • Selected for Rome workshop, 2019 | |
| Mars geology | Limits of units on Mars | From Tanaka latest global map? https://pubs.usgs.gov/sim/3292/ See file SIM3292_Global_Geology.shp - but we want it split in connected units (they are actually contacts, or overlaid surfaces) | JacobsUni? | IDEA | Actual info is s_region contours + region properties. Granules should be connected units to make it efficient | | Use case = in association with crater databases, for dating | voparis-gitlab? There is a placeholder called mars_geological_map under PADC /planeto |
| Solid spectroscopy | | | | | | | | |
| pds_speclib | PDS spectral lib | Laboratory spectroscopy of mineral samples, in support of CRISM/MRO, on PDS Geosciences node | PADC / LESIA, Erard | ONLINE | Define (spectral) extension to describe minerals. Can be enlarged with other open mineral spectroscopy db - either in the same service or separately, this is mostly a political decision | To be studied with SSHADE & DLR emission database & external contributors. Uses mixin/CSV grammar | Draft from Graz 2017 VESPA workshop. Assessment for other lab spectroscopy services. | voparis-gitlab |

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| BRSL | Berlin Reflectance Spectral Library | Laboratory spectroscopy of mineral samples in support of VIRTIS/Rosetta | DLR, Kappel / Henckel | DRAFT | Finalize, review Publish (policy issue at DLR) | Uses mixin/CSV grammar | Draft from Graz 2017 VESPA workshop. Assessment for other lab spectroscopy services. | |
| PSL | Planetary Spectroscopy Laboratory | Laboratory spectroscopy of mineral samples in support of MERTIS/BepiColombo, and more (in emission) | DLR, Helbert / Maturilli | DRAFT | Publish (policy issue at DLR) | Potentially the first Europeanet TA database Uses mixin/CSV grammar. Uses DaCHS Docker version | VESPA 2018 Prague workshop | |
| SSHADDE | | Spectroscopy of ices and minerals. A set of ~ 20 evolving databases (including GhoSST). Alternative access to SSHADDE service from VESPA interface. Focus first on reflectance spectra? | Grenoble, IPAG | ONLINE | Spectro / sample descriptors required. Need to check /request new UCDS. | First Europeanet TA database published. Regular update required - connection to primary db. Make it usable in CASSIS and SPLAT-VO (OK for spectra) | Draft from VESPA 2018 Prague workshop, finalized end of programme | voparis-gitlab |
| HOSERLab / Planetary Spectrophotometer Facility | pspecf | Large spectral library (in XLS files) | Ed Cloutis, Winnipeg Univ. | DRAFT | Parse Xcel files: metadata, then spectra To be finalized - try on 1 pyroxene file, this is inferno ;(| | Contacted at EPSC2018. Rome 2019 workshop | voparis-gitlab (under PADC /planeto for some reason) |
| Magnetospheres / radio | | | | | | | | |
| AMDA | CDPP AMDA DataBase | AMDA Planetary Plasma database | CDPP, Toulouse | ONLINE | check server Check descriptions, Check data type handling (returns results for spectrum, but only dynamic_spectrum included?) Add param saying if data are in the magnetosphere, solar wind, or both | Regular connection to APIS | Updated to v2 | |
| APIS | Auroral Planetary Imaging and Spectroscopy | Aurorae images/spectra data base (HST) | PADC, Paris | ONLINE | Check descriptions ? access_url should point to spectra, not to images of spectra (spectra are under native_access_url) | Reference for EPN-TAP extension to auroral data. Get data selection from Hisaki service, reformatted (Nov 2017) New data from Cassini UVIS, oct 2019 | updated to v2, then refreshed (no mixin) | voparis-gitlab |
| NDA | Nancay Decameter Array observation database | Jupiter decametric radio observations from Nancay. Part of JUNO-Ground-Radio Observation Support. Solar data added in 2021 | Nancay | ONLINE | Check descriptions update target name | Daily updates. (formerly JupiterDAM then NDA, then RoutineJupiter) Extended to solar data, March 2021 ~ 2x content (but nb of granules reduced with datalink) | Updated to v2, to be tested Something to fix about datalink | |

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| RadioJove | Amateur radio observations of Jupiter | | PADC | DRAFT | Finalize, check descriptions Populate | Initial (draft) version has been unpublished in 2021 because of sparse content; should be reinstalled on the US side | Updated to v2 | voparis-github |
| MDISC | | Access to UCL Magnetodisc model output. | UCL, London | ONLINE | Add radius as parameter Add new simulations? | Distribute data both in matlab and netCDF format Work on tool connection for reading / visu | First model in v2 from Toulouse 2016 VESPA workshop | voparis-github |
| JASMIN | | Access to UCL Jovian thermosphere model | UCL, London | ONLINE | Check service | | | voparis-github |
| Kronos | Cassini radio data | | PADC | DRAFT | | Part of MASER services Name to be changed | | |
| IMPEX_EPN20 | Db from IMPEX simulation tree | | Graz, IWF | ONLINE | Resurrect, update Fix data access! - some data at FMI were removed (actually not accessible) | | updated to v2 Enlargement in AMDA studied during Graz meeting | |
| LatHyS | More Impex data | Hybrid simulation db (used to prepare BepiColombo mission) | LATMOS, Modolo / Cecconi | DRAFT | Restarted in 2022 | | | voparis-github |
| VExMAG_EPN20 | Dataset from MAG /Venus-Express | Venus-Express legacy | Graz, IWF | ONLINE | Resurrect, update | | updated to v2 from Toulouse 2016 VESPA workshop | |
| litateHF | litate Radio Telescope HF data of Jupiter | Part of JUNO-Ground-Radio Observation Support | litate / Tohoku Univ, Japan | ONLINE | Fix issue with server & updates Fix formatting issues | Data is updated every night, after daily observation (formerly called litate) | Updated to v2, being tested | |
| Hisaki | Hisaki E-UV observations of Jupiter, Venus and more | From Hisaki JAXA mission, Exceed instrument | Tohoku Univ, Japan | ONLINE | Finalize, add calibrated data APIS extension compliance (May 2017) Some non-compliances corrected (Dec 2017) But some remain | Regularly synchronized with APIS (from Nov 2017) Updated by periods; latest ones not accessible (proprietary) | Test service, v2 direct | |
| KHTM | MHD instabilities at 67P/C-G | | IAPS, Rome, Ivanovski | DRAFT | Adapt coordinate system to something more std | | First model in v2 from Toulouse 2016 VESPA workshop | |
| PSWS_Transplanet | Transplanet | A Transplanet model of magnetosphere-ionosphere coupling at Earth, Mars, and Jupiter (simulation runs) | IRAP, Toulouse | ONLINE | To be populated? (last data are from 2015) | | From PSWS WP, 6/2017 | |
| cpstasm | cpstasm | Earth magnetosphere measurements by CLUSTER, correlation matrix. Cluster data in CDF format, to be processed with iPECMAN tool. Requires new UCD to be defined (spectral matrix). Output (also CDF) to be visualized in Autoplot. Das2 protocol to be added on top | IAP, Prague | ONLINE | Reviewed & published | | VESPA Prague workshop 2018, finalized during Rome 2019 workshop | |

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|--------------------|---|--|---|---------|--|---|--|----------------|
| THMSM | thmsm | Spectral matrix data from the Earth magnetosphere obtained by the THEMIS satellites. Same interface as cpstasm | IAP, Prague | ONLINE | Reviewed & published | | From cpstasm service, after Rome 2019 workshop | |
| Mex_Marsis_ne | MarsExpress / MARSIS | MARSIS radar measurements, atmosphere only | U. of Iowa, SwRI | DRAFT | | Handle times series with Autoplot and das2server (with changing resolution) | VESPA 2018 Prague workshop | |
| ASPERA | MarsExpress / ASPERA data | | U. of Iowa, SwRI | DRAFT | | Handle times series with Autoplot and das2server (with changing resolution) | VESPA 2018 Prague workshop | |
| PDS PPI — name TBD | MESSENGER and Maven data | Selection of data collections from PDS PPI | UCLA + U. of Iowa, SwRI | PLANNED | | | Started during VESPA 2020-21 on-line workshop | |
| LOFAR-FR606 | Coordinated Decametric observations from LOFAR station in Nançay (nb FR606) | Part of JUNO-Ground-Radio Observation Support | Nançay | PLANNED | | | | |
| LOFAR_Jupiter | LOFAR observations of Jupiter, | Measurements under 2 different polarization directions ■ there is also a lofar_jupiter_raw.epn_core table on the server - what is this? | CBK-PAN, Poland Lukasz Tomasik, Barbara Matyjasiak, pozoga | ONLINE | netcdf files | | Graz & Prague workshops 2017/18 | |
| RWCalerts | Space weather test service | Forecast of Solar-geophysical activity and propagation conditions to Earth | CBK-PAN, Poland Lukasz Tomasik, Barbara Matyjasiak, pozoga | DRAFT | VOevents | | Graz & Prague workshops 2017/18 | |
| kharkiv | UTR-2-JUNO-ground (to be enlarged to other instruments on site) | Coordinated Decametric observations from Ukraine T-shaped Radiotelescope-2. Part of JUNO-Ground-Radio Observation Support | Institute of radio astronomy NASU / RINANU. Kharkiv, Ukraine | DRAFT | Workaround solution for public data installed in Japan, still not functional. File formatting issue (TBC) Still distributing raw binary data files (4000+ files, 2GB each), no previews yet. | (to be enlarged to other instruments than UTR2 on Kharkiv site) | First model in v2 from Toulouse 2016 VESPA workshop. Updated May 2017 with mixin/custom grammar | |
| coronasf | | Coronas-F satellite measurements (time series in cdf) - charged particle fluxes in the Earth's magnetosphere from orbit. | LMSU/SINP Moscow | DRAFT | Files load in TOPCAT | | VESPA 2018 Prague workshop | |
| Mag models | | Magnetosphere models of Mercury and Saturn, using IMPEX architecture | LMSU/SINP Moscow | DRAFT | | | VESPA 2018 Prague workshop | |
| LWA1 | Coordinated Decametric observations from Long Wavelength Array 1 | Part of JUNO-Ground-Radio Observation Support | Owens Valley, New Mexico, USA | PLANNED | | | | |
| MASER | Set of services and tools for radio astronomy /planetary | Initial data services: voyager_pra: restoration of Voyager Planetary Radio Astronomy data ExPRES: simulations Cassini-Jupiter: Cassini /RPWS data products Stereo_waves Wind_waves TiCat RadioJove (above) | ObsParis, LESIA, Cecconi | ONLINE | | First 3 services reviewed and published, more to come | March 2019 | voparis-gitlab |
| Exoplanets | | | | | | | | |

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|-------------------------------------|---|---|-----------------------------------|---------|---|--|---|----------------|
| Encyclopedia of Extra-Solar Planets | Encyclopedia of Extra-Solar Planets | Compilation of published data | PADC | ONLINE | EPN-TAP descriptors reviewed (April 2017) Further improvement in July 2018, with links to detailed information on web site | Reference for EPN-TAP extension to exoplanets and celestial objects Check with exoplanets DM to come. Updated to v2, TAP output checked. Need to rebuild with mixin and DaCHS2 | | voparis-gitlab |
| Exotopo | | Simulations of topography of Exoplanets (maps) | GEOPS (installed on IPSL / ESPRI) | ONLINE | | | | voparis-gitlab |
| Exoclock | Exoclock | Ground based transits, support to ARIEL mission | UCL, A. Kokori | PLANNED | | | | |
| Exoplanets Transit Database | ETD | Web site in Prague, including amateur data. We've been contacted at EPSC 2020 | Prague, Filip Walter | IDEA | Need to study the situation first of all. | | | |
| Solar physics | | | | | | | | |
| HFC1T3 | Heliophysics Feature Catalog type 3 radio bursts | Solar feature catalogues (from HELIO program) | PADC | ONLINE | Check descriptions and links, fixes required | | Updated to v2, to be tested | voparis-gitlab |
| HFC1AR | Heliophysics Feature Catalog active regions | Solar feature catalogues (from HELIO program) | PADC | ONLINE | Check descriptions and links, fixes required | UCD of HFC1 must be reviewed | Updated to v2, to be tested | voparis-gitlab |
| HFC1FIL | Heliophysics Feature Catalog ? | Solar feature catalogues (from HELIO program) | PADC | IDEA | | | | |
| SPASE | SPASE registry | List of SPASE services | PADC | DRAFT | | | | voparis-gitlab |
| IPRT | IPRT /AMATERAS litate Planetary Radio Telescope Solar Data | Solar radio observations | litate / Tohoku Univ, Japan | ONLINE | Populate? (expected regular updates, TBC) Fix issue with server | (Formerly called pparc_r) | v2 direct, to be tested | |
| CLIMSO | | Images of the photosphere and low corona with two coronagraphs (on H-, He I, Fe XIII) and two telescopes (on H-, Ca II) | IRAP, Toulouse | ONLINE | Evolving data content, runs smoothly | Need to rebuild with mixin and DaCHS2 | First model in v2 from Toulouse 2016 VESPA workshop, then updated | voparis-gitlab |
| BASS2000 | BASS2000 (Paris) | | PADC | ONLINE | Upgrade required (July 2019) Updated to DaCHS2, 2021 | Regular updates, OK | First draft in May 2017. Published May 2018 | voparis-gitlab |
| GAIA-DEM | | Solar images from SDO Fits images (compressed internally, won't load in SAOimage/ds9) - maps with a specific projection (HPC) | IAS/MEDOC | ONLINE | Published under DaCHS v1 | Cross study of GAIA-DEM with BASS2000 and related services, TBD | Started at VESPA 2018 Prague workshop, advanced draft in April 2019, updated and published 2021 | voparis-gitlab |
| eit_syn | | Synoptic maps of the corona in the extreme-UV (EUV), built from series of SoHO/EIT observations | IAS/MEDOC | ONLINE | Draft for DaCHS v1 Issue with waveband vs messenger? | Reviewed 2021, approved by team | | voparis-gitlab |

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| name TBD | Sunspots Coronal holes | 2 services at Royal Obs of Belgium | ROB | PLANNED | One with 2 tables, TBD | | VESPA 2020- 21 on-line workshop, started in advance | |
| Radio Solar Database => nrh & orfess | Nançay Radio Solar Database | From Nançay data, split in separated services. Will start with NRH and ORFEES services in Nançay | PADC / NDC | DRAFT | Design VO interface. Make it consistent with other projects in the field Existing draft for NRH and ORFEES, 2022 | Being reviewed | | Currently on https://gitlab. obspm.fr/DB /vo-nrh to be moved |
| eCallisto | eCallisto | World-wide network of Solar radio spectrographs | Windisch (Switzerland), Csillaghy | DRAFT | Issue with support of some million rows from DaCHS through the portal - async access is recommen ded in this case - TBC Issue with datalink under DaCHS2, TBC | | Rome 2019 workshop | voparis- gitlab |
| RHESSI | RHESSI | Solar Spectroscopy imager from a NASA mission, 2002- 2018 | Windisch (Switzerland), Csillaghy | DRAFT | Using loca l mirror of data | | | voparis- gitlab |
| IRIS_Obs | Interface Region Imaging Spectrograp h | Interface Region Imaging Spectrograph. NASA mission, 2014+ | Windisch (Switzerland), Csillaghy | DRAFT | Q regarding data access. | | | voparis- gitlab |
| THEMIS | THEMIS observatory data | Archive of solar data from THEMIS telescope in Canary Islands. Fits files available here: http://voparis-srv-paris. obspm.fr/vo/themis/ | PADC | IDEA | Study extraction of metadata from headers, and format complianc e. Check if format is consistent along time. Check completen ess of dataset | Older version (in Tarbes) used a tricky DM, check if this may be adapted to EPN- TAP | Legacy data in Paris, 2020 | |
| Generic / interdisciplinary | | | | | | | | |
| BDIP | Base de Données d'Images Planétaires | Historical planetary images in Meudon (ground-based) | PADC / LESIA (Drossart, Henry, Cecconi) | ONLINE | Rearrang e data products (jpeg vs fits), add previews, + check descriptio ns (from local db) Compute pointing (mostly phase) + Fix image orientation? Enlarge contents (other existing digitized images) | Phase angle can be retrieved from Miriade, other parameters more difficult (time of day not always available) Orientation is more difficult, should be reconstructed from images. | Updated to v2, to be tested. Sept 2017: rebuilt with mixin / grammar, queries LESIA database in SQL during ingestion. | voparis- gitlab |

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|------------------------------|---------------------------------|--|--|---------|---|---|--|--|
| Planets | Main characteristics of planets | From IAU / Allen reference data, very simple and short table - adapted to tutorials | PADC | ONLINE | Declare properly in registry (issue with reference URL field) To be enlarged with satellites info (see below)? | (In Feb 2016) best model for UCDS / param (with IKS) & q.rd file. Test service, updated to v2 in 2016. Updated to mixin /grammar Dec 2017 Add datalink to Miriade? (OK in test, Jan 2018) - could be at the moment of query. | | voparis-gitlab |
| Extend "Planets" service | | | | IDEA | Satellites info available at IMCCE, to be added. Extend to orbital parameters? - should be available in a db at IMCCE. | | | |
| PVOL | | Amateur imaging of giant planets + Mars/Venus | Planetary Sciences Group, UPV /EHU, Bilbao | ONLINE | SQL trigger to handle new data coming in. Finalize EPN-TAP access Register | Fixed issue with corrections after ingestion | First model in v2 from Toulouse 2016 VESPA workshop | |
| spectro_planets | Planetary spectra | Low res, global spectra of planets and satellites. References for ground observations, provide only 1 or 2 typical spectra/object (from selected archives). Includes historical data of interest | LESIA, Erard | ONLINE | Identify sources; currently THN library + USGS + IRTF + JSNU + occasional LESIA data Convert files to documented VOTable, not fits (for use in CASSIS) - this is tricky in some cases Collect complete info from original papers Add ephemeris from Miriade in the table (or datalink to Miriade)? | See interoperability with Planets service. Spectral calibration unchanged, not homogeneous - but solar spectra provided also 2020: several alt versions including ephemeris data in table | | voparis-gitlab (should be reorganized in branches) |
| Polarbase_planets (name TBD) | Planetary spectra | Excerpt from Polarbase, from Narval & ESPaDOnS instruments at Pic du Midi (targets intended to provide solar spectra) | IRAP, Glorian | PLANNED | Very similar to spectro_planet in scope | | Proposed by Jean-Michel Glorian, Jan 2020. Started during VESPA 2020-21 on-line workshop | |
| IRTF_Orton | IR telescopic images of Jupiter | Images from IRTF, Hawaii, in support of Juno | PADC/LESIA, Cecconi | DRAFT | Get metadata from fits headers, call Miriade to compute ephemeris Finalize? | Can be used as template for collections of poorly documented observations, will retrieve ephemeris parameters on the fly | V2 draft version | |

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| † Cassini rings | Cassini CIRS ring data | Assessment study of EPN-TAP services and VESPA infrastructure for Cassini derived data services to come. Final implementation depending on strategy at mission level | JPL (Connell, Brooks) | DRAFT | | Was an assessment study at JPL, dropped in 2018 | From Graz workshop, 2017 | |
| Juno images | From Juno spacecraft camera | No geometry available? | U. of Iowa, SwRI | DRAFT | | | VESPA 2018 Prague workshop | |
| PSA | ESA's Planetary Science Archive | Complete archive published early 2018. Currently distribute files & labels in a zip with dataset documentation. Only ~ 6 Mfiles among 18 in 2018 (Rosetta RPC filtered out - this slowed down the first draft, and provided no usable information) Difficult on ESA side to retrieve description parameters: PDS/EPN-TAP correspondence is very much dataset dependent. | Madrid, ESAC | ONLINE | Get parameters from files /datasets? Identify a better way to access detached labels (datalink?). | | v2 direct started in 2016. Uses ESA non-DaCHS server (TAP library), apparently with modifications (new fct ivo_hashlist_h as not available) | |
| HST_planeto | HST planetary data | Data of planets, dwarf planets and satellites (no asteroids) from HST. Calibrated & derived products. Data and thumbnails at CADC | PADC & CADC | ONLINE | Data selection is tricky... Target name, instrument & detector name, obs type are controlled and fixed Data description still to be improved? (multiple targets, etc) | Includes ephemeris data via datalink Daily updates. | Fom Victoria Interop meeeting, 2018 | voparis-gitlab |
| VizieR planeto | VizieR catalogues = B/Planets | Table linking Solar System-related catalogues in VizieR (query to a web service returning one or more VOTables). 1400+ tables identified from keywords, regularly growing | CDS & ObsParis | ONLINE | <ul style="list-style-type: none"> Access tricky to handle in the portal: "B/planet", requires specific handling mode Check description & parameters, complete a minima for publication <p>Solved issue: Support for lower cases and hash-list in Volt server.</p> <p>Remaining issue with value list handling</p> | Will only provide access to existing tables - but most of them when displayed on VizieR include links to additional data files (not always). So this service will be best accessed through the portal. <ul style="list-style-type: none"> Need to agree upon an update procedure (will require manual check of description) | First draft 2019. Extended description of catalogues started May 2021. | voparis-gitlab (under Volt, not DaCHS! + initial name = B/Planets_epn_core) CSV only (no rd file) |

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| CDPP alerts | Solar wind predictions | Server of VOevents from PSWS | IRAP/CDPP, ObsParis | DRAFT | Missing parameters in VOevent standard - needs to specify where the event originates from • Name to be changed | Pb with events versus conditions - format TBC | VESPA 2018 Prague workshop | |
| CDPP alerts - detection | Fireballs, etc | Server of VOevents from PSWS | IRAP/CDPP, ObsParis | DRAFT | Missing parameters in VOevent standard - needs to specify where the event originates from • Name to be changed | Pb with events versus conditions - format TBC | VESPA 2018 Prague workshop | |
| meteor_showers | Predictions, on planets | Server of VOevents from PSWS. From simulations of ejection of cometary material + propagation in Solar System | ObsParis, Vaubailon | ONLINE | Reviewed. Finalized during Rome 2019 workshop. Check format of VOevents. | | from PSWS. Reviewed during Rome 2019 workshop | |
| Herschel | ESA's Herschel archive for Solar System objects | Extract from global archive? Only standard products, ie raw and pipeline (TBC) Alternative is to connect the complete ESAsky catalogue - SSOs are identified from ephemeris search, not from catalogue entries | Madrid, ESAC | DRAFT | EPN-TAP parameters - identified - restrained in this case | (To be done on their side) Evaluation by Baptiste: easy to do but requires optimization of target identification + data files are not standard fits cubes - how should they be handled? | Assessment study, Jan 2020 | |
| T1m Pic du Midi, images | | | IMCCE, Colas | IDEA | Would still be very nice! First need to make fits headers uniform. Distribute raw images and make it a collaborative service accepting submission of calibrated products? May require to hire a post-doc to check & process everything • But get data first of all! • Other parameters probably required, e.g. camera orientation in focal plane | Ephemeris can be called during ingestion, see IRTF_Orton | Use with EPN-TAP2 mixin (fits grammar) & call ephemeris from q.rd | |

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| Opposition of Mars 1994 | | Processed images from Pic du Midi: calibrated & projected | LESIA, Erard | IDEA | May be used as a first demo of complete T1m service | | | |
| Opposition of Mars 1999, HST | HST images from J. Bell | PDS GeoSciences Node has a dataset of 1999-2001 opposition images and cubes in fits + geometry & projected versions. More elaborated version than the HST archive /HST_planets service, reformatted: projected and include i/e angles. Fits files, provided with PDS labels. ~ 500 images, each in cylindrical and orthographic projection + cubes grouping series of 12 related images for each projection & incidence/emission angles. | LESIA | IDEA | Demo for use of images + coordinates planes (include only cubes?) Congruence with HST_planets | Should be included in HST_planets? Pb: file extensions are not "fits", so they won't open automatically | | |
| Titan ground based observations | | Historical work from the 90s only? | LESIA, Henry | IDEA | First, recover data on old machines (from M. Combes). + Also see with Athena if she has derived data to distribute | On-going recovery project at ObsParis | | |
| Stellar spectra | | Vis / NIR from IRTF Vis from ESO | | DRAFT | See also at ESO + Kurucz | Support for observations, use with pipeline to scale magnitudes. Include links to Simbad whenever possible | | on voparis-gitlab |
| † Planetary images from OHP student's obs? | | | | IDEA | | Not favorite: unprocessed, sparse, and planetary content is limited | | |
| Paris library drawings | | | | IDEA | | Outreach only | | |
| (TBC) | ? | Database of images and simulated data to test processing methods | IPAG, Sylvain Douté | IDEA | Data exist, to be completed | Think about new data | | |
| (TBC) | ? | List of codes available online for Planetary Science | Paris ??? | IDEA | Could be based on IDIS resource list from FP7 - has to be cleaned up and modernized though. Can be TAP, but not EPN-TAP. • Or instead, use github of OpenPlanetary (ideally, that should be in IPDA registry...) | Potential issue with maintenance. Would help wait for computing on demand system | | |