UCD requests from SSIG

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Previous proposal (1)

Plasma environment modeling

- magnetic potential vector.
  `phys.magfield;phys.potential` OR **`phys.magfield.potentialvector`**

- electric current density (total current density of all charged particles: electrons, protons, ions…)
  `phys.flux;phys.atmol.ionstage` is not satisfactory.

Spectroscopic and photometric measurements

- **Note**
  In Spectrum DM, spectral dependencies are given in UCD. For instance:
  - Flux Density per unit wave: `phys.flux.density;em.wl`
  - Surface Brightness per unit frequency: `phys.flux.density.sb;em.freq`

  Is this something that we want to keep for the future?

- **New identified needs**
  - Illumination map: fraction of total input flux received on a given location of a planetary surface.
  - reflectance vs albedo: Albedo is a spectrally integrated value, where as reflectance is characterizing the spectral variation of the reflection properties.
    `phys.albedo;em.wl` ? OR **`phys.reflectance`**
  - Radiance: an intrinsic property of source characterizing the radiated flux in a given direction. Unit is $W/m^2/sr$, $W/m^2/sr/nm$ for spectral radiance (wl in nm).
    `phys.luminosity;phys.angArea;em.wl` ? OR **`phys.radiance`**`;em.wl`

  NB: change `phot.radiance` *to* `phys.radiance` *? (this is an intrinsic property, not observed quantity)*

Previous proposal (2)

Illumination conditions

- **Note:** only pos.phaseAngle available.

- **New identified needs**
  - Incidence angle. Same as "solar zenithal angle"

    pos.incidenceAng

  - Emergence angle:

    pos.emergenceAng

  - Azimuth angle:

    pos.azimuthAng

Coordinates and ephemeris

- **Coordinates**
  - planetary magnetospheric coordinates use colatitude and not latitude (spherical coordinates).

    pos.bodyrc.colat

- **Orbital Parameter**
  - perifocal distance:

    pos.distance;src.orbital.perifocal

- **Generic coordinate systems**
  - current coordinate systems in "pos." UCDs are: AZ, BodyRC, Cartesian, Earth, Ecliptic, EQ, Galactic. Adding generic cylindrical system would be useful:

    pos.cylindrical.r / pos.cylindrical.th / pos.cylindrical.z

Previous proposal (3)

Coordinates and ephemeris (cont'd)

- **Vector or matrix components**
  - Adding a way to say "this a component of a vector or a matrix, and not the full set of information":
    `phys.component`

- **Rotation parameter description**
  - necessary for describing attitude and orientation parameters
    `pos.rotation.eulerAng`
    `pos.rotation.quaternion`
    `pos.rotation.matrix`
    `pos.rotation.axis`

- **More info here**
  https://voparis-confluence.obspm.fr/display/VES/VESPA+Contribution+to+NASA-JPL+WebGeoCalc+tool

Metadata

- **New identified needs**
  - checksums: MD5 hash
    `meta.cryptic;meta.file (?)`
    `meta.checksum``;meta.file`
  - modification date
    `time.processing;meta.file`
    `time.update``;meta.file`

  to be compared with creation date
    `time.creation;meta.file`
  and release date
    `time.release;meta.file`

Previous proposal (4)

EPN TAP keywords

- **Spatial Resolution**
  - We need spatial resolution (spatial sampling: in situ or projected on target) and angular resolution

    pos.resolution
    pos.angResolution

- **Heliospheric coordinates**
  - There is a heliocentric related UCD, but it is a generic reference frame qualifier. Adding heliocentric longitude coordinates would be useful.

    pos.heliocentric.lon

  - while there, let's add also heliocentric latitude.

    pos.heliocentric.lat

New proposals

- **Spectral Matrix (or Jones Matrix)**: matrix of auto- and cross-correlations between colocated antenna with different polarizations (similar to "auto"-visibilities = visibility with null base-line)
  Could be either :
  - a child of `phys.polarization`, as it is a raw measure of the polarization
  - a child of `instr` as is tells what type of instrument/mode set up is used.

  This UCD would be used to advertise clients that a data product contains this specific type of data (used in `obscore:o_ucd` or `epn_core:measurement_type`) in order to select the tools to send the product to.

- UCD for **gravitational field** "Power Spectrum of Spherical Harmonic Coefficients of Lunar Gravity Model":
  - `phys.gravitation`

- **Shape model (full 3D shape) or Terrain Model (or Elevation model)** with respect to reference geoid or ellipsoid:
  - `phys.shape`
  - `phys.shape.elevation`

- **Spatial Resolution**: The `pos.resolution` UCD has been deprecated at some point and replaced by `pos.AngResolution`. We need it back for, e.g., cartesian axes.

Status and update of UCD

- What is the status of the UCD update discussed last year?

- What is the result of the tests done with provided examples?

- We tried a system based on RT (Request Tracker) for managing new UCD proposals, but it did not work. Other options ?