IHDEA #4 – Oct. 2020

HAPI in AMDA

AMDA team and collaborators

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AMDA in brief

- http://amda.irap.omp.eu
- In operation since 2005
- Helio and Planeto missions; also includes radar, indices, simulations and models
- In a web session, the user can access, plot, combine, mine and download data
- Registered users can store their online work
- SPASE is used at all levels of data description





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Interoperability in AMDA

- Interoperability is one of the key features of AMDA
 - To distribute its data
 - To favor bridging between tools and to enhance science return
- A short review of use cases
 - SAMP and EPN-TAP
 - Web-services
- HAPI in AMDA

SAMP and EPN-TAP

Simple Application Messaging Protocol

- ~10 years ago IVOA/SAMP and EPN-TAP were implemented in the frame of Europlanet
- Connexion between AMDA and APIS (enabled through EPN-TAP) to bridge in-situ measurements and auroral imagery at giant planets
- SAMP is used to send images to Aladin (FITS)
- Génot et al., 2014



EPN-TAP interface in AMDA GUI

- Also developed in the frame of Europlanet
- All AMDA datasets are visible and accessible through EPN-TAP (for instance from <u>http://vespa.obspm.fr</u>)
- A client exploring all EPN-TAP services is also available in AMDA

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Web-services

- Developed in the frame of IMPEx project to distribute in-situ and model data to partnering tools and databases
 - Ex.: THEMIS observed magnetic field vector plotted along the spacecraft trajectory in CDPP/3DView
- Further improvements during the years (options, rate, ...)
- REST and SOAP are available
- <u>http://amda.irap.omp.eu/help/apidoc</u>



HAPI: implementation feedback

- A first « quick and dirty » prototype was put in place 2 years ago
- Full development, testing and installation took 5 days
 - Implementation (3d) + integration (2d)
- Use of the official node.js HAPI server:
 - Create a script to generate datasets and parameter metadata files from AMDA local tree (build from our SPASE registry)
 - "/data" endpoint streams data content thanks to a bind to the AMDA REST web services
- No major issues
- Some red lights appear in the Validation Tests but are not blocking
 - Minor AMDA problems linked to dataset start/stop times
- *Plus*: the Validation Tests enables the testing of all AMDA parameters at once

http://amda.irap.omp.eu/service/hapi

🔏 amda.irap.omp.eu/service/hapi

HAPI Server for amda datasets

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This server supports the HAPI 2.0 API specification for delivery of time series data.

The server responds to GET requests to the following HAPI endpoints:

- <u>capabilities</u> list the API version and output options
- <u>catalog</u> list the datasets that are available (499 total) Now 649
- info list information about parameters in a dataset, e.g,:
 - ./hapi/info?id=ace-imf-all
 - ./hapi/info?id=ace-mag-real
 - ./hapi/info?id=ace-swe-all
 - ./hapi/info?id=ace-swepam-real
 - ./hapi/info?id=ace-swp-all
- data stream data for parameters in a dataset. Examples for first dataset:
 - o ./hapi/data?id=ace-imf-all¶meters=imf_mag&time.min=1997-09-02T00:00:12Z&time.max=1997-09-03T00:00:12.000Z
 - ./hapi/data?id=ace-imf-all¶meters=imf&time.min=1997-09-02T00:00:12Z&time.max=1997-09-03T00:00:12.000Z
 - ./hapi/data?id=ace-imf-all¶meters=imf_gsm&time.min=1997-09-02T00:00:12Z&time.max=1997-09-03T00:00:12.000Z

Contact: amda@irap.omp.eu

1997-09-02T00:00:28.000Z,2.348 1997-09-02T00:00:44.000Z,2.384 1997-09-02T00:01:00.000Z,2.302 1997-09-02T00:01:16.000Z,2.370 1997-09-02T00:01:32.000Z,2.455 1997-09-02T00:01:48.000Z,2.355 1997-09-02T00:02:04.000Z,2.388 1997-09-02T00:02:20.000Z,2.349 1997-09-02T00:02:36.000Z,2.336 1997-09-02T00:02:52.000Z,2.339 1997-09-02T00:03:08.000Z,2.318 1997-09-02T00:03:24.000Z,2.279 1997-09-02T00:03:40.000Z,2.303 1997-09-02T00:03:56.000Z,2.295 1997-09-02T00:04:12.000Z,2.203 1997-09-02T00:04:28.000Z,2.199 -09-02T00:04:44.000Z,2.139 1997-09-02T00:05:00.000Z,2.177 1997-09-02T00:05:16.000Z,2.140 1997-09-02T00:05:32.000Z,2.099 1997-09-02T00:05:48.000Z,2.272

Run Validation Tests

http://amda.irap.omp.eu/service/hapi

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 - ./hapi/data?id=ace-imf-all¶meters=imf&time.min=1997-09-02T00:00:12Z&time.max=1997-09-03T00:00:12.000Z
 - ./hapi/data?id=ace-imf-all¶meters=imf_gsm&time.min=1997-09-02T00:00:12Z&time.max=1997-09-03T00:00:12.000Z

Contact: amda@irap.omp.eu



Run Validation Tests

<u>http://amda.irap.omp.eu/service/hapi?id=so-orb-</u> <u>all¶meters=so_r_sun&timerange=2020-07-02+through+2020-07-</u>

vap+hapi:http://amda.irap.omp.eu/service/hapi?id=so-orb-all¶meters=so_r_sun&timerange=2020-07-02+through+2020-07-30

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canvas axes style layout metadata

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http://amda.irap.omp.eu/service/hapi?id=mgs-eromni&timerange=2005-01-02+through+2005-01-

vap+hapi:http://amda.irap.omp.eu/service/hapi?id=mgs-er-omni&timerange=2005-01-02+through+2005-01-03 \sim

canvas axes style layout metadata



Next steps

- Version 3.0 ?
 - Waiting for specifications and update of node.js server

Side notes

- Units in UTF-8 are not well handled by Autoplot
- VOunit may be considered in AMDA for standardization

