

Level 2 Analysis* Products

*not Science

Status 11/5/2007

- Lead: Rick Bogart
- Tasks
 - Produce remapped, tracked tiles of HMI Doppler (and other) data suitable as input for local helioseismology analysis
 - Provide tools for custom mapping and tracking
 - Input: Calibrated HMI Doppler and other data, assumed corrected for geometrical distortion



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Stanford University, 5 Nov 2007



Level 2 Analysis Products

- Data Products
 - tracked remapped tiles
 - hmi.LHV_tiled_5deg, hmi.LHV_tiled_10deg, hmi.LHV_tiled_30deg
 - tracked tile mosaics
 - hmi.LHV_tracktile_5deg, hmi.LHV_tracktile_10deg, hmi.LHV_tracktile_30deg
 - others *TBD*
- Modules
 - *project* - projections to maps from images or maps
 - *trackm* - multiple mappings tracked from time series of images
 - *extrackd* - extraction of subsets from tracked mappings
 - others *TBD* for gap filling, movies



Level 2 Analysis Products

| series | module | cadence (sec/rec) | size (MB/rec) | Tape | Retain (days) | Description |
|-------------------------|-----------------|----------------------|------------------|------|------------------|---|
| hmi.LHV_tracktile_5deg | <i>trackm</i> | 474 | 711 | Yes | 275 | tracked mapped tiles extracted at original observing cadence; tiles are N° diameter at spacing $N/2^\circ$ in arc distance; grid uniform in latitude, varies in longitude. Each tile tracked for full duration of disc passage necessary to produce the analysis maps, i.e. while within $\sim 80^\circ$ of disc center. Records identified by latitude, Carrington longitude, and CM time |
| hmi.LHV_tracktile_15deg | <i>trackm</i> | 4670 | 6070 | Yes | 275 | |
| hmi.LHV_tracktile_30deg | <i>trackm</i> | 21800 | 24500 | Yes | 275 | |
| hmi.LHV_tiled_5deg | <i>extrackd</i> | 12 | 23 | No | 55 | mosaics ("dense-pack") of tracked tiles covering visible disc at a variety of latitudes and CM longitudes at each sampled time. Extracted from the tracked tiles of different records in ds hmi.LHV_tracktile_Ndeg. Each tile is tracked for N° in Carrington rotation, with new sets extracted every N° in CR. Records identified by latitude, CM longitude, and time |
| hmi.LHV_tiled_15deg | <i>extrackd</i> | 350 | 610 | No | 55 | |
| hmi.LHV_tiled_30deg | <i>extrackd</i> | 2800 | 4900 | No | 55 | |



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Modules

trackm

direct DRMS port of *fastrack* v1.9 with simplification and support for possible later improvements to interpolation scheme and non-uniform tracking rates; currently supported projections:

plate carée

Postel

cylindrical equivalent

Cassini-Soldner

gnomonic

sinusoidal equivalent

Mercator

orthographic

Lambert equivalent

stereographic

project

equivalent to *trackm* for single remap; direct DRMS port of same SOI module (change name?)

extrackd

DRMS port of equivalent SOI modules; prototypes exist

extract



Level 2 Analysis Products

Input Data – assumes level 1 data with known distortion-free geometry, observer space-time coordinates, velocity, and attitude, pref. heliocentric/heliographic
– assumes few single- or few-pixel gaps

Status – mapping, tracking, and extraction codes well-defined and implemented in SOI, need to be ported to DRMS; some improvements in interpolations expected but not known to be critical at this point
– need to create and/or ingest appropriate test data sets
– need requirements from science data processing leads
– need schedule

Concerns – ring-diagram and time-distance analyses may require different tracking rates

