AIA

Data products: above level 1.5

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Provisional summary - V1.1
AIA Processing Pipeline and Standard Products

AIA data

Level-1.0

Level 1.5:
Despiked, co-aligned, flat-fielded, dc-offset and plate-scale corrected, exp.-time corrected intensity images

HMI data

- Far-side activity map
- Line-of-Sight Magnetic Field Maps
- Vector Magnetic Field Maps
- Coronal magnetic Field Extrapolations
- Coronal and Solar wind models
- Brightness Images

EVE data

- Full-Sun spectra
- Light-curve metadata

HPKB meta-data

- Active regions
- Coronal dimmings
- Filaments
- Filament eruptions
- Flares
- Sunspots
- Coronal oscillations
- Emerging flux
- New event classes
- Community-provided events

Browse/ Level-2 products

- Tracked AR-area movies
- Event summary movies
- "Sun by date" & HPKB
- (E)UV light curves
- EUV synoptic maps
- 4 global DEM maps/day
- 3-temp movies 4 frames/h
- Low-res full-Sun summ.
- Comparisons of NLFFF or MHD models with EUV coronal images
- PFSS-EUV comp. 4/day

Segmentation maps: AR, EF, QS, CH (4/day)
- Carrington & Disk maps

AIA science tasks

- 3D coronal configuration
- Mapping coronal free energy
- Unstable configurations
- Life-cycle of atm. field
- (E)UV contributors
- Properties of EUV features
- Models of EUV irradiance
- Predicting EUV irradiance
- Transient initiation
- Transient evolution
- Early CME evolution
- Particle acceleration
- Corona-heliosphere coupling
- Solar-wind energetics
- CME propagation
- Vector fields and flows
- Transverse coronal waves
- Longitudinal coronal waves
- Probing corona with waves
- Field Topology & wave prop
- HMI events search
- EVE events search
- Other events search

Inspection and Science analysis

Comparisons of NLFFF or MHD models with EUV coronal images

PFSS-EUV comp. 4/day

Segmentation maps: AR, EF, QS, CH (4/day)

Carrington & Disk maps
## AIA meta-data, and supporting meta-data

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<td>Magnetograms 1/hour</td>
<td>NOAA AR info</td>
<td>Obs. inspection</td>
<td>AR box</td>
<td>AR movies; EUV AR light curves; EUV-model field</td>
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<tr>
<td></td>
<td>AIA EUV images 1h sets at 1/min. 1kx1k</td>
<td>-</td>
<td>Position/time info.</td>
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<td>Event summary movies</td>
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<tr>
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<td>Obs. inspection</td>
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<td>Filaments</td>
<td>AIA EUV images -</td>
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<tr>
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<tr>
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<td>-</td>
<td>NOAA/GOES and EVE events</td>
<td>Position/time info., peak brightness.</td>
<td>Segm. map; 1/h</td>
<td>Event summary movies</td>
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<td>Coronal oscillations</td>
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<td></td>
<td>Position, time</td>
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<td>Event summary movies - link to flare movies</td>
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<tr>
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<td>Position/time:</td>
<td></td>
<td>Event summary movies</td>
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<tr>
<td>New event classes</td>
<td>TBD</td>
<td>TBD, incl. thermal movies and DEM maps</td>
<td>TBD</td>
<td>Obs. inspection</td>
<td>Class definition</td>
<td>TBD</td>
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<tr>
<td>Community-provided</td>
<td>-</td>
<td>-</td>
<td>TBD</td>
<td>Appropriate meta-data in xml format</td>
<td>Summary image or movie</td>
<td>TBD</td>
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</table>

- Not funded under AIA contract. We will accommodate externally provided events (in standard xml format), or negotiate to support projects external to AIA.
### AIA WWW/browse data products

<table>
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<tr>
<th>Table Entry</th>
<th>Required meta-data</th>
<th>Required AIA data</th>
<th>Required supplemental data</th>
<th>Time windows and temporal cadence</th>
<th>Field of view and spatial resolution</th>
<th>Output format(s)</th>
<th>Accessible via HPKB (IVORN)</th>
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<td>(E)UV images, 1k cutout</td>
<td>HMI magnetograms</td>
<td>Up to disk passage; 15m</td>
<td>1kx1k, full-res.</td>
<td>Movie: format(s) TBD</td>
<td>Y</td>
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<tr>
<td><strong>Event summary movies</strong></td>
<td>HPKB: all event types other than AR</td>
<td>(E)UV images, 1k cutout or 1k binned full fov</td>
<td>HMI magnetograms</td>
<td>Up to 6h; 5m</td>
<td>1kx1k, full-res. or full-fov</td>
<td>Movie: format(s) TBD</td>
<td>Y</td>
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<tr>
<td><strong>(E)UV lightcurves</strong></td>
<td>HPKB: AR</td>
<td>Total intensity, and AR-region intensity; all ch.</td>
<td>EVE light curves</td>
<td>Past three days; past 24h; 10s</td>
<td>N/A</td>
<td>Lightcurve images</td>
<td>N</td>
</tr>
<tr>
<td><strong>(E)UV synoptic maps</strong></td>
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<td>Monthly summaries; 24h</td>
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<td>Images</td>
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<td>HMI magnetograms</td>
<td>6h</td>
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<td>Images</td>
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</tr>
<tr>
<td><strong>Three-channel ‘temperature’ movies</strong></td>
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<td>Daily summaries; 1h</td>
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<td>N</td>
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<td>HMI magnetograms</td>
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<td>1kx1k rebinned</td>
<td>Movie: format(s) TBD</td>
<td>N</td>
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<tr>
<td><strong>Comparisons of EUV images and model fields</strong></td>
<td>HPKB: AR</td>
<td>AIA EUV images</td>
<td>HMI magnetogram; PFSS&amp;NLFFF field models</td>
<td>12h</td>
<td>1kx1k full-res.</td>
<td>Images</td>
<td>Y? for highly nonpotential fields</td>
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<tr>
<td><strong>PFSS-EUV comparisons</strong></td>
<td>-</td>
<td>AIA EUV images</td>
<td>HMI magnetogram, PFSS model</td>
<td>12h</td>
<td>1kx1k rebinned full-fov</td>
<td>Images</td>
<td>Y: open-field regions</td>
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<tr>
<td><strong>AIA&amp;Ext.: Segmentation maps</strong></td>
<td>HPKB: AR, CH, other events,</td>
<td>-</td>
<td>NOAA AR info, GOES flare info</td>
<td>1h</td>
<td>1kx1k rebinned full-fov.</td>
<td>Images: Carrington Maps + Disk Masks</td>
<td>N</td>
</tr>
</tbody>
</table>

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Event Capture and AIA Level-2 processing

@Stanford
- Archive
- SUMS
- Public Server

@LMATC
- RDRMS

Derived Products
- Level 1 Cache
- Movie Processing
- Inspection & Science Analysis

Event ID System
- Get Event
- Register Event

HEK Registries
- HER
- HCR

Inference System
- Get Event

Public Server
- Data Services
- Request Data/Series

Data
- Events
- Web Clients

Movies
- Public Server