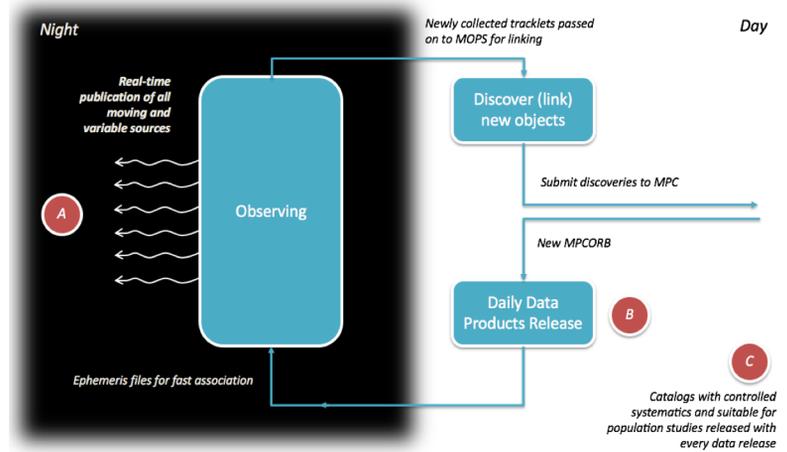


# Data Products for Solar System Science

The LSST will deliver groups of data products in support of Solar System Object (SSO) science, at prompt and annual cadences:

- A. Prompt, within 60 seconds of observation:** measurements of all detections on difference images, including known and unknown SSOs. Suitable for real-time discovery of trailed objects, and activity of known objects.
- B. Prompt, daily:** Catalogs of SSO physical properties and orbits, including new objects identified by MOPS.
- C. Data Releases, annual:** Catalogs with controlled systematics and suitable for population studies.

➔ Find out more in [1] and [2]



Daily LSST processing with data products supporting Solar System Science

## A. Real-time Alerts (>=2M SSO observations/night)

|                                  |  |
|----------------------------------|--|
| Astrometry                       | ±10 mas (bright; ±140 faint)                             |
| PSF flux                         | ±10 mmag (bright end)                                    |
| Aperture flux                    | ±10 mmag (bright end)                                    |
| Trailed source fit               | Flux and on-sky motion for fast-moving (trailed) objects |
| Appearance characterization      | Moments and extendedness of the object's image           |
| Spuriousness score               | Probability that the detection is an artifact            |
| Nearby static objects            | Information on adjacent objects (up to three)            |
| MPC designation                  | Given for known objects                                  |
| Predicted position and magnitude | Given for known objects                                  |

### More information:

- [1] *LSST Overview Paper*: <http://ls.st/lop>
- [2] *Data Products Definition Document*: <http://ls.st/dpdd>
- [3] *Solar System Data Products Schema*: <http://ls.st/ouq>

## B. Daily Solar System Products (>= 5.5M objects)

|                              |   |
|------------------------------|---|
| Orbits                       | Computed by the MPC                             |
| Light-curve characterization | Period, light curve shape, other features       |
| Absolute magnitude estimates | Estimates of (H, G12) in u,g,r,i,z,y bands      |
| MOID                         | Minimum Orbit Intersection Distance to Earth    |
| Extendedness indicators      | Is/was the object comet-like in its appearance. |

## C. Solar System Data Release Products (every year)

|  |  |
|--|--|
| High-fidelity reprocessing               | Catalogs derived from re-reductions of all survey data using improved calibrations and a single, well-characterized, software release. |
| The LSST Catalog of Solar System Objects | A catalog, suitable for population studies, of objects detected by LSST with orbits estimated using only LSST data.                    |

Subject to change based on development and commissioning experiences and community feedback. This handout summarizes version 20180921-draft.