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# International Earth Science Constellation Mission Operations Working Group June 5 - 7, 2019 Constellation Coordination System (CCS) Status

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# Agenda

- CCS Purpose and Goals
- CCS 2019.1
- CCS Demo
- CCS Future
  - Releases 2019.2
- Feedback
  - Feedback and Discussion

## CCS Purpose and Goals

- CCS is a system for coordinating and monitoring Constellation safety of the Earth Sciences Constellation (ESC) missions and is a central source of data sharing and operational planning.
  - Primary tool for monitoring the Constellation configurations.
  - Supports information exchange among/between partner ESC missions.
  - Transfer critical data between the Mission Operation Centers (MOCs), Conjunction Assessment Risk Analysis (CARA), and other authorized mission users.
  - Mission Analysis tools and automated health and safety monitoring.
    - Automated constellation safety warning notifications.
    - Graphical visualization of orbital data.
- The latest release, CCS 2019.1, was deployed to operations on 05/01/2019.

## CCS 2019.1 New Features

Released: 1<sup>st</sup> of May 2019

- **Scheduled Analyses** - Allowing users to create recurring tool analyses and receive the results files via email.
  - Can be run when products are acquired, or on a scheduled basis using the most recent product, such as daily, weekly, or monthly.
- **Recently Acquired Products** – A display of the most recent products acquired by CCS.
  - Allows user to see all products for a single mission acquired after a certain date
- **Date-Range Downloads** - For retrieving large sets of products in a single download.
  - Choose a product and a date range, and download all the products that were acquired in the selected range

# CCS 2019.1

Released: 1<sup>st</sup> of May 2019

Michael Goff Logout 14:35:53 UTC

## Scheduled Analyses

**Analysis Type**  
Ad Hoc XY Plot Analysis

**Analysis Name**  
Ad Hoc 1

### Select Mission and Product Rule

**Mission** Aqua **Product Rule** Aqua - Ephemeris - Predicted (STK3 format)

### Parameters

**Select an X-Axis Parameter**  
Epoch

**Select Y-Axis Parameters**  
Argument Of Latitude x BLJ2MA x

**Use ephemeris points?**  
No Yes

### Analysis Schedule and Options

Creating a Scheduled Analysis through the Scheduled Analysis Main Page

# CCS 2019.1

## Released: 1<sup>st</sup> of May 2019

The screenshot shows the 'Select Mission and Product Rule' section of the CCS 2019.1 web interface. The 'Mission' dropdown is set to 'Aqua' and the 'Product Rule' dropdown is set to 'Aqua - Ephemeris - Predicted (STK3 format)'. Below this is the 'Parameters' section, where the 'X-Axis Parameter' is 'Epoch' and the 'Y-Axis Parameters' are 'Argument Of Latitude x' and 'BLJ2MA x'. The 'Use ephemeris points?' section has 'No' selected. The 'Analysis Schedule and Options' section shows 'Recurrence Type' as 'Weekly', 'Recurrence Period' as 'Repeat every 1 day at 00:00 UTC', and 'Deliver results via email?' as 'No'. A time selection dropdown is open, showing a list of times from 00:00 to 03:00. The 'Submit', 'Reset', and 'Cancel' buttons are visible at the bottom.

Picking a Recurrence Time through the Scheduled Analysis Main Page



# CCS 2019.1

Released: 1<sup>st</sup> of May 2019

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- [Administration](#)
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- Tools**
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  - [Control Box and Phasing Analysis](#)
  - [Mean Local Time at the Nodes](#)
  - [Phase Margin Analysis](#)
  - [Phasing at the Poles](#)
  - [Satellite Situational Awareness](#)
  - [Single Orbit Altitude Versus Latitude](#)

## Scheduled Analyses

[Add Scheduled Analysis](#)

Filter Scheduled Analyses

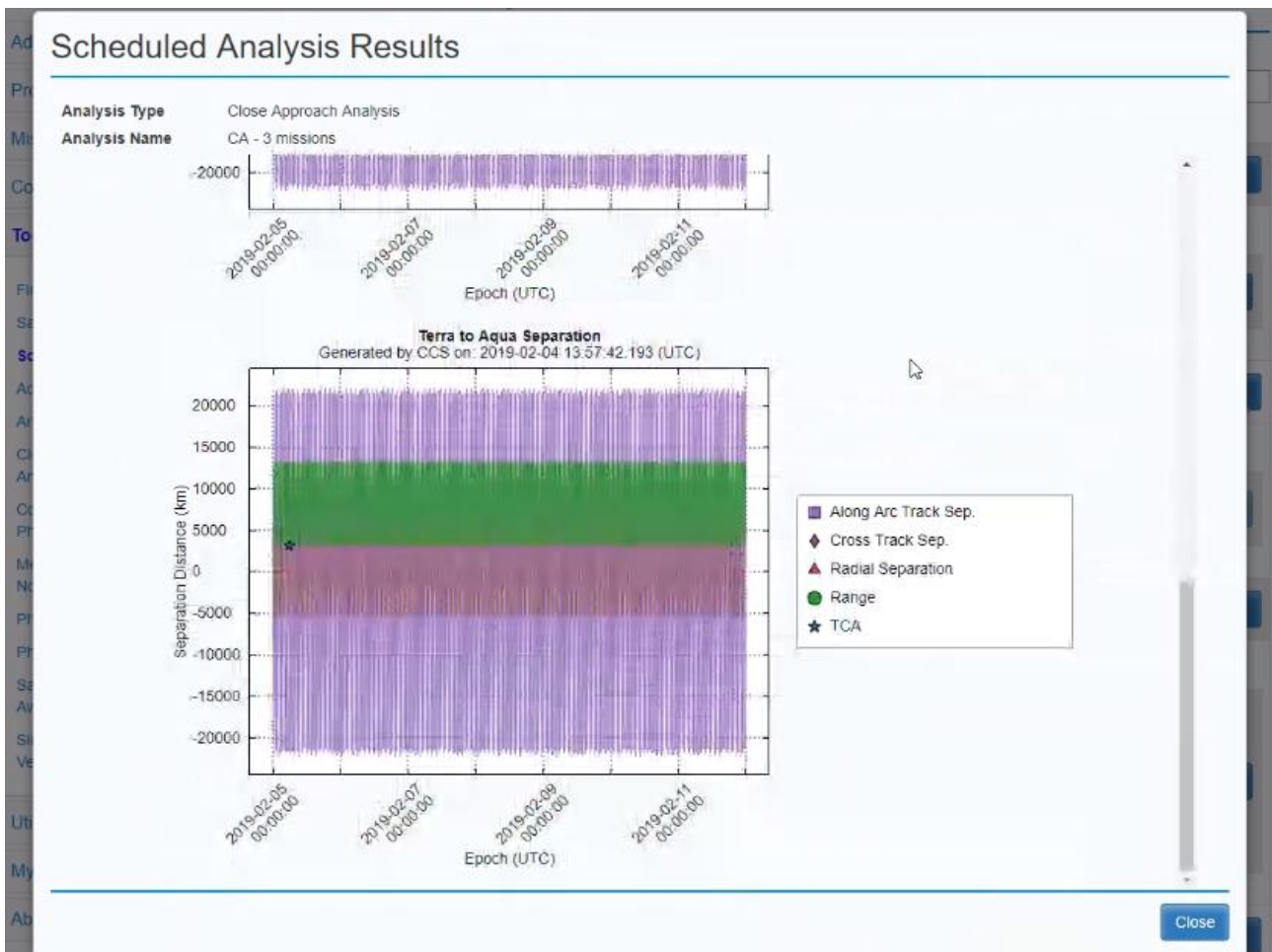
Analysis Name	Analysis Type	Last Ran Date ↓	
<a href="#">Phasing at the poles</a> <i>Recurrence: Daily at 08:29 UTC</i>	Phasing at the Poles Analysis	2019-02-13 08:33:24 UTC	<a href="#">Edit</a> <a href="#">Delete</a>

Date Ran	Available Reports	Ephemerides Used	
2019-02-13 08:33:24 UTC	<ul style="list-style-type: none"> <li>• <a href="#">Aqua_to_Aura_PhasingAtThePoles Analysis.bt</a></li> <li>• <a href="#">PhasingAtThePolesVideo.mp4</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PM_EOSEPHM7_043_2019_01.e</a></li> <li>• <a href="#">CH_EOSEPHM1_044_2019_01.e</a></li> </ul>	<a href="#">Download All Reports</a> <a href="#">View Plots</a>
2019-02-13 08:27:24 UTC	<ul style="list-style-type: none"> <li>• <a href="#">Aqua_to_Aura_PhasingAtThePoles Analysis.bt</a></li> <li>• <a href="#">PhasingAtThePolesVideo.mp4</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PM_EOSEPHM7_043_2019_01.e</a></li> <li>• <a href="#">CH_EOSEPHM1_044_2019_01.e</a></li> </ul>	<a href="#">Download All Reports</a> <a href="#">View Plots</a>
2019-02-13 08:00:43 UTC	<ul style="list-style-type: none"> <li>• <a href="#">Aqua_to_Aura_PhasingAtThePoles Analysis.bt</a></li> <li>• <a href="#">PhasingAtThePolesVideo.mp4</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PM_EOSEPHM7_043_2019_01.e</a></li> <li>• <a href="#">CH_EOSEPHM1_044_2019_01.e</a></li> </ul>	<a href="#">Download All Reports</a> <a href="#">View Plots</a>
2019-02-13 07:57:28 UTC	<ul style="list-style-type: none"> <li>• <a href="#">Aqua_to_Aura_PhasingAtThePoles Analysis.bt</a></li> <li>• <a href="#">PhasingAtThePolesVideo.mp4</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PM_EOSEPHM7_043_2019_01.e</a></li> <li>• <a href="#">CH_EOSEPHM1_044_2019_01.e</a></li> </ul>	<a href="#">Download All Reports</a> <a href="#">View Plots</a>
2019-02-13 07:53:46 UTC	<ul style="list-style-type: none"> <li>• <a href="#">Aqua_to_Aura_PhasingAtThePoles Analysis.bt</a></li> <li>• <a href="#">PhasingAtThePolesVideo.mp4</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">PM_EOSEPHM7_043_2019_01.e</a></li> <li>• <a href="#">CH_EOSEPHM1_044_2019_01.e</a></li> </ul>	<a href="#">Download All Reports</a> <a href="#">View Plots</a>

Selecting a Scheduled Analysis from the Scheduled Analysis Main Page

## CCS 2019.1

Released: 1<sup>st</sup> of May 2019



Results Page for a Scheduled Close Approach Analysis



## CCS 2019.1

Released: 1<sup>st</sup> of May 2019

- [Home](#)
- [Administration](#)
- Products**
- [Product Rules and Files](#)
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- [Manage Product Rules](#)
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### Recently Acquired Products

Use this tool to search for the latest products acquired for a given mission since a specified date and time.

#### Search Criteria

**Mission:**

**After Date/Time UTC:**

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Product	Product Rule	Start Date	End Date	Date Acquired ↓
CAL_PREDICTED_EPHEMERIS_2019_01_07_07_00_15	CALIPSO - Predicted Ephemeris	Invalid date	Invalid date	2019-01-07 17:24:07.733 UTC
CALIPSO_MERGED_EPHEMERIS_2019_01_06_07_00_14.E	CALIPSO -- Merged - Predicted Ephemeris	2019-01-06 05:21:35.000 UTC	2019-02-24 05:21:35.000 UTC	2019-01-07 09:39:49.160 UTC
CAL_PREDICTED_EPHEMERIS_2019_01_06_07_00_14.E	CALIPSO - Predicted Ephemeris Converted to STK	2019-01-06 05:21:35.000 UTC	2019-02-24 05:21:35.000 UTC	2019-01-07 02:58:10.417 UTC
CAL_PREDICTED_EPHEMERIS_2019_01_06_07_00_14	CALIPSO - Predicted Ephemeris	2019-01-06 05:21:35.000 UTC	2019-02-24 05:21:35.000 UTC	2019-01-06 22:20:45.440 UTC

Recently Acquired Products page displays all products and rules CCS has acquired over time.

## CCS 2019.1

Released: 1<sup>st</sup> of May 2019

### Current Mission

Aqua

Create a Product Rule

### Current Product Rule [Select a different Product Rule](#)

Product Rule Name	Rule Type	File Format	File Template
Aqua - Ephemeris - Daily Predicted (STK8 format)	Conversion	STK 8.0 Ephemeris	PM_EOSEPHEM<n>_<jjj>_<yyyy>_<w>.e

### Select a Product File

Download Products by Date Range

Filter Product Files

Product File Name	Created ↓	Processed	Native	Start Date	End Date	
<a href="#">PM_EOSEPHEM_007_2019_01.e</a>	2019-01-07 08:43 UTC	Yes	Yes	2019-01-07 00:00 UTC	2019-01-14 00:00 UTC	Delete
<a href="#">PM_EOSEPHEM1__2019_01.e</a>	2019-01-04 06:19 UTC	Yes	Yes	2019-01-04 00:00 UTC	2019-01-11 00:00 UTC	Delete

The new Bulk Download Button, found on every Product Rule page

## CCS 2019.1

Released: 1<sup>st</sup> of May 2019

### Download Products By Date Range

**Product Rule:** Aqua - Ephemeris - Predicted (STK3 format)

**Start Date/Time UTC**

**End Date/Time UTC**

<< < Mar 2019 > >>

24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

<< < Apr 2019 > >>

31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

**Start Time**

**End Time**

Selecting a Date Range for the Bulk Product Download

## CCS 2019.1

Released: 1<sup>st</sup> of May 2019

### Download Products By Date Range

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**Product Rule:** Aqua - Ephemeris - Predicted (STK3 format)

Start Date/Time UTC	End Date/Time UTC
<input type="text" value="2019-02-06 00:00:00.000"/>	<input type="text" value="2019-02-28 00:00:00.000"/>

---

Selecting a Date Range for the Bulk Product Download

## CCS 2019.1

Released: 1<sup>st</sup> of May 2019

Small updates and fixed “Pain Points:”

- Users can now log in using either their username or the email associated with their account.
- Added clearer visual for updating a mission’s status.

### Update Status Flags

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Select a Mission

Aqua

**Satellite Status** ?

**Instrument Status** ?

**Constellation Status** ?

Satellite Notes

Instrument Notes

Constellation Notes

## Demo

# Demo Time!



## CCS 2019.2 New Features

**Release: End of Summer (estimated)**

- The CCS website is receiving a small facelift to help the site be more responsive on your smaller and larger screens.
- The Close Approach and Control Box emails are being updated to reduce the volume of emails received each day.
- Tools are being unified into a single form, similar to the Scheduled Analyses creation page, to help pick the right content for their inquiry.
- Subscriptions are being streamlined to allow users to send multiple products to a single FTP site.

## Feedback

- What ideas or suggestions do you have?
- What are the capabilities you find most useful currently?
- What would make CCS more useful to you?
- Would additional training and/or outreach be beneficial to you?

## Thank you

- Thank you for your continued support!
- For all CCS communications please contact:

**[ccs-support@lists.hq.nasa.gov](mailto:ccs-support@lists.hq.nasa.gov)**