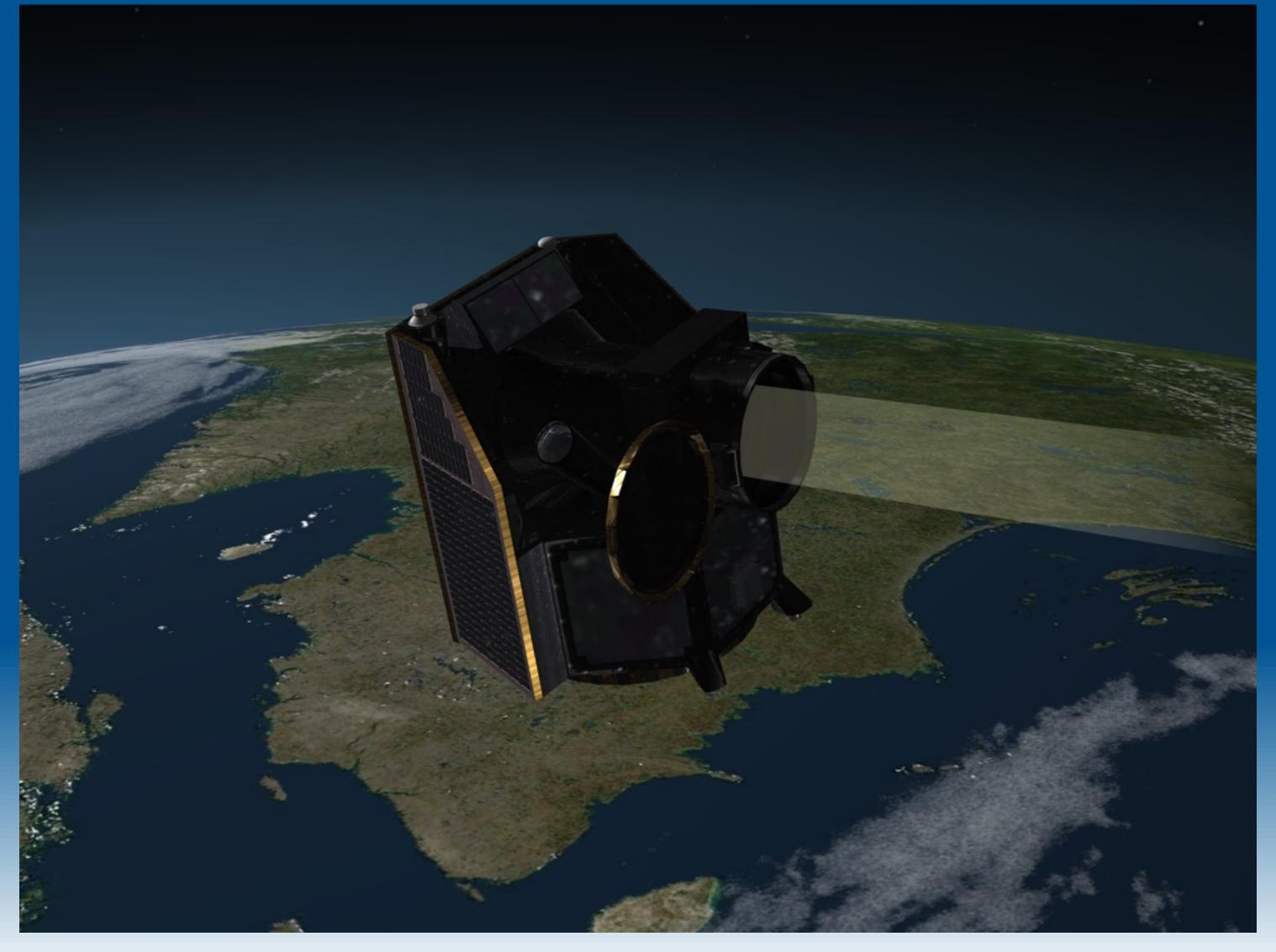
SAMIEdit - Getting Started CHEOPS







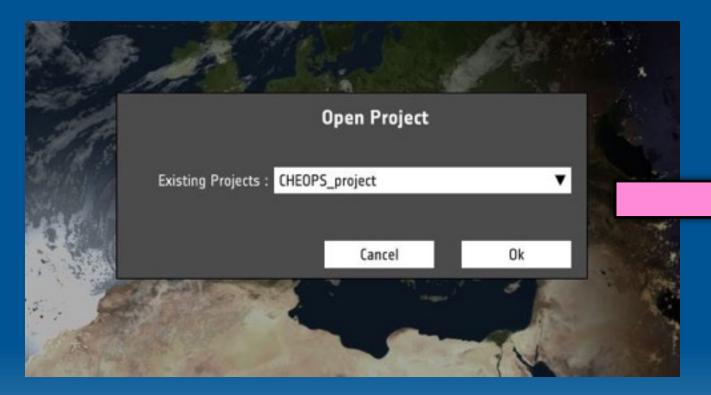
Load Example Project

• Project —> Open

Application	Project	Simulation	Cameras	Ground Stations	Satellites	Export	?
	New	Ctrl N		<u>.</u>			
	Open	Ctrl O					
	Save	Ctrl S					
	Save As	Ctrl Shift S					
	K) Edit Proj	ect Time Range					

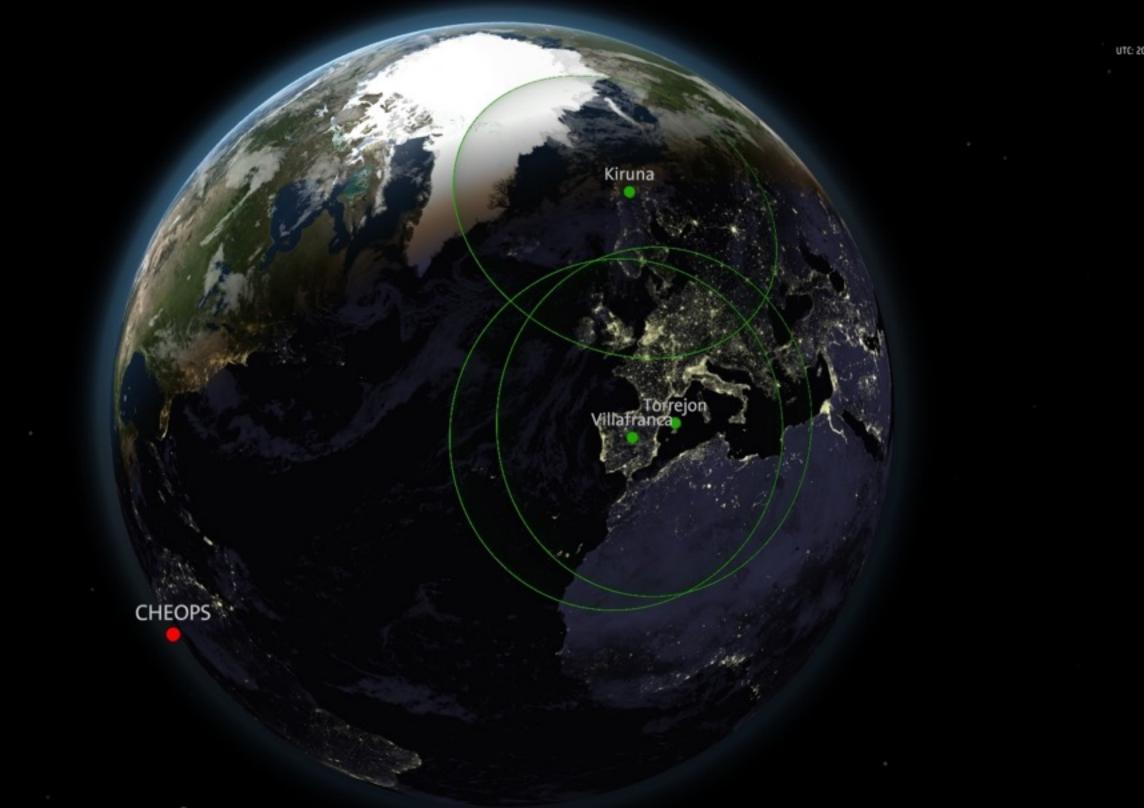
CHEOPS Orbit Number: 1 Time Since ANX: 3490.61

• Select CHEOPS_project









Inspect Example Project

+TA SAMEdit	
CHEOPS Dobt Number: 1 Time Since AAOC: 3490.6312 Lat: 13-13 201 43* Lat: 13-13 201 43* Lat: 13-13 201 43* DaySig to DaySig to	CHEOPS
(2) – é + ⊣►►	2019-06-01 *
EARTH	
SATELLETES CHEOPS TARGET OBJECTS	own1 HHLE25ea
CIS THRUSTERS	
GROUND STATIONS	
KERUNA	
TORREJON	
VELLAFRANCA	





Mouse click and drag up/down to display the Timeline editor

Time block indicating when the instrument is observing a star

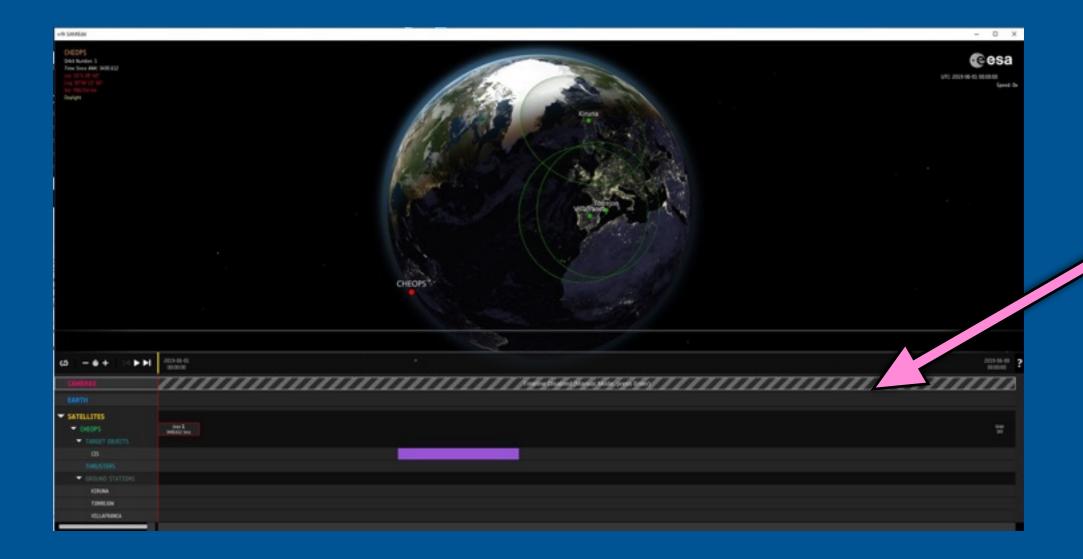
eesa

2019-06-08 00:00:00

UTC: 2009-06-00 00:001

Set Camera to Manual Mode

• Cameras —> Enable Manual Camera Mode



• Changes in camera view are triggered manually by pressing the 'Enter' key





Application	Project	Simulation	Cameras	Ground Stations	Satellites	Export	?
			Enable Manua	Camera Mode			

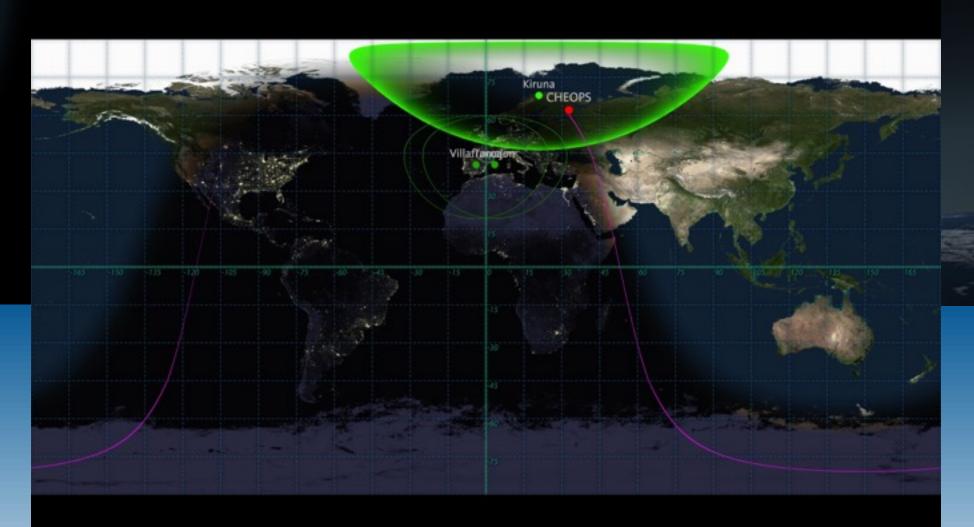
Camera in Timeline Mode is disabled

Change Manually Camera View

• Three camera views available by default



Allowed user interaction: Rotate, zoom and pan







2D Earth View

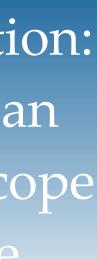




Satellite View

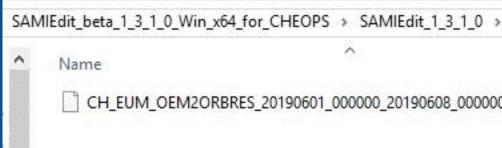
Allowed user interaction: Rotate, zoom and pan Double-click on telescope cover to open/close



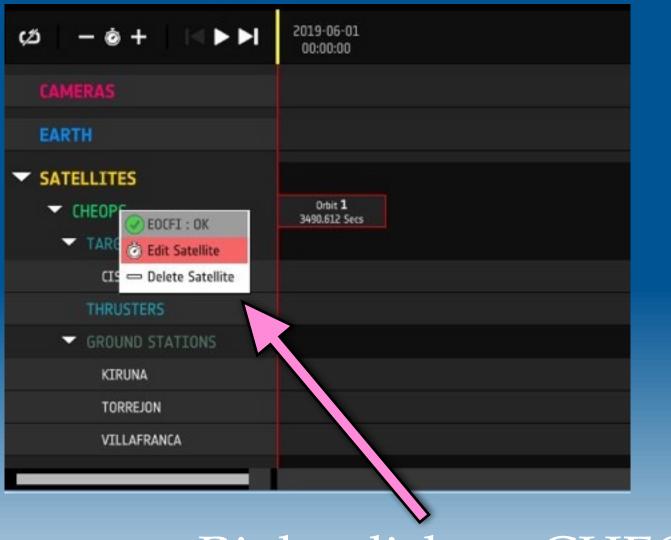




• Orbit File (in EO XML GS format) copied into "POF" folder



Orbit File loaded through application interface Satellite Config



Select Orbit filename in POF folder

Right-click on CHEOPS

CHEOPS Orbit



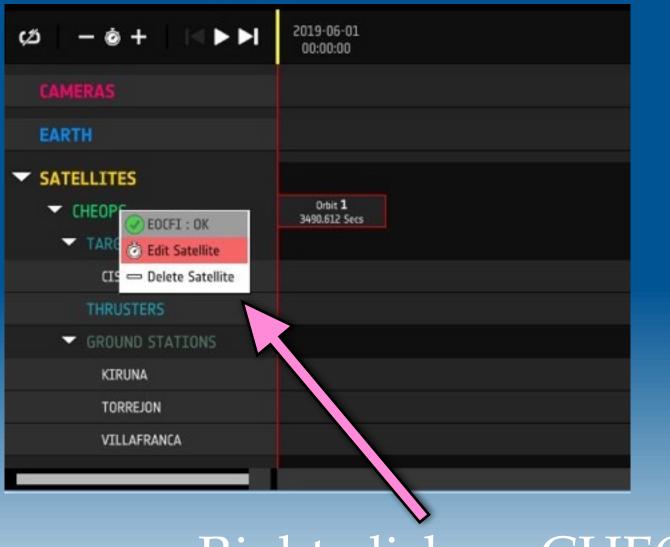


Repos > Sate	llites > CHEOPS > CH	EOPS > POF	
	Date modified	Туре	Size
0.EOF	19/07/2019 18:20	EOF File	983 KB

Label :	CHEOPS				
Satellite Model :	HEOPS	V			
Configuration :	HEOPS	•			
EOCFI Id:)	KL_SAT_GENERIC	*			
Drbit File	205	_			
Type : Filename : 0	TH_EUM_0EM20RBRES_2	20190601_0	00000_20190608	8_000000.EOF	
<u>s</u>	TART : 2019-06-01 00:00:00 PERIOD : 5933.451 (s)			END : 2019-06	-08 00:00:00
Attitude File					
Attitude File Type : 🛛	ADF	•			
Type : 🖊	ADF (NT_ADF_SC_INERTIAL_)	▼ TARGET.CH			
Type : 🖌 Filename : 📘		TARGET.CH		END : 2099-12	-31 00:00:00
Type : 🖌 Filename : 📘	INT_ADF_SC_INERTIAL_	TARGET.CH	Orbit Track	END : 2099-12	-31 00:00:00
Type : A Filename : I	INT_ADF_SC_INERTIAL_		Orbit Track Length (Orbit		-31 00:00:00

CHEOPS Attitude • Attitude Definition File (in EO XML GS format) copied into "ADF" folder SAMIEdit_beta_1_3_1_0_Win_x64_for_CHEOPS > Name

• Attitude Definition File loaded through application interface



Select Attit in AD

INT ADF SC CANONICALCH

INT ADF SC INERTIAL TARGET.CH

Right-click on CHEOPS

SA	MIEdit_1_3_1_0 > Repo	os > Satellites >	CHEOPS > CHEOPS > ADF
	Date modified	Туре	Size
	07/09/2019 19:27	File	3 KB
	23/08/2019 14:31	CH File	3 KB

ude filename
F folder

Basic Infos					
Label :	CHEOPS				
Satellite Model :	CHEOPS				
Configuration :	CHEOPS	V			
EOCFI Id :	XL_SAT_GENERIC	¥			
Orbit File					
Type :	POF	V			
Filename :	CH_EUM_OEM2ORBRES_20	190601_0	00000_20190608_000	000.E0F	۷
o	START : 2019-06-01 00:00:00 PERIOD : 5933.451 (s)			END : 2019-06-08 00:00	2:00
Attitude File		3/			
Type :	ADF	V			
Filename :	INT_ADF_SC_INERTIAL_T	ARGET.CH			•
e	START: 1950-01-01 00:00:00		i.	END : 2099-12-31 00:00):00
Ground Track			Orbit Track		
Length (Orbits) :	1		Length (Orbits) : 🛽		1
Color :		v	Color :		•
			C	ancel	Ok
			and the second		

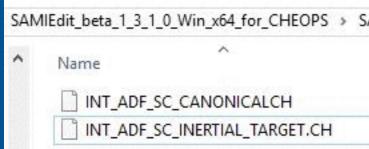
Satellite Config





CHEOPS Attitude

• Two attitude Definition Files are provided by default in the "ADF" folder



\star Canonical —> Primary axis pointing to the opposite direction to the Sun ★ Inertial Target —> Primary axis pointing to the star location

27	ф <	Data Block type="xml">
28	ė.	<attitude definition=""></attitude>
29	白	<sat att="" nominal=""></sat>
30	_ ⊨	<parameter model=""></parameter>
31		<model>GENERIC</model>
32	¢	<list_of_parameters count="10"></list_of_parameters>
33		<parameter>0</parameter>
34		<parameter>6</parameter>
35		<parameter>255.0</parameter>
36		<parameter>0.0</parameter>
37		<parameter>0.0</parameter>
38		<parameter>2</parameter>
39		<parameter>2</parameter>
40		<parameter>0.0</parameter>
41		<parameter>0.0</parameter>
42		<parameter>0.0</parameter>
43	-	
44	-	
45	-	





SAN	MIEdit_1_3_1_0 → Repo	os > Satellites > C	HEOPS > CHEOPS > ADF	
	Date modified	Туре	Size	
	07/09/2019 19:27	File	3 KB	
	23/08/2019 14:31	CH File	3 KB	

Coordinates of the target star (RA, DEC)

• It is also possible to supply attitude quaternion data (in EO XML GS file format) through the "ATT" folder

• Useful to display transitions between attitude modes

CHEOPS Attitude (II)







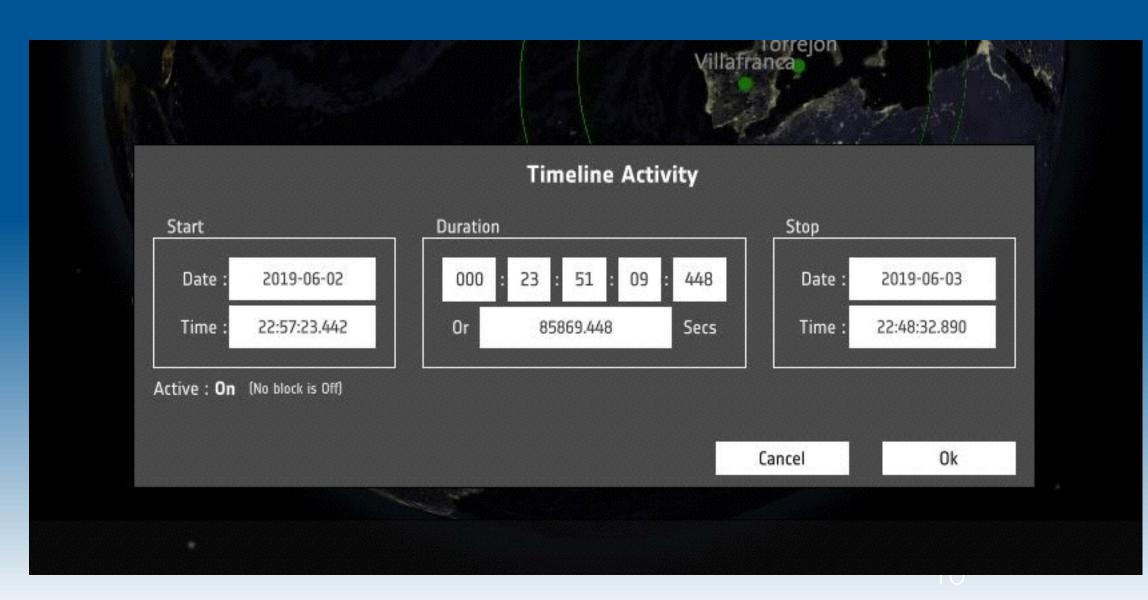


Display Instrument Field-of-View

Add a time block in the "Target Objects" timeline element

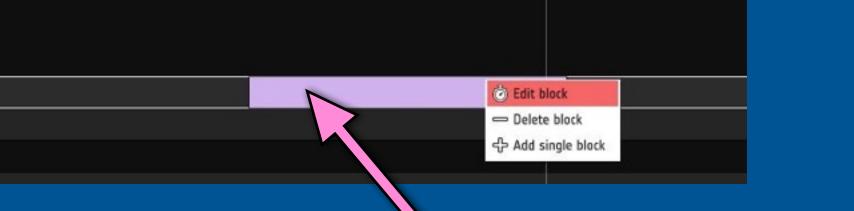
 SATELLITES CHEOPS TARGET OBJECTS 	Orbit 1 3490.612 Secs	
cīs		
THRUSTERS		
I GROUND STATIONS		

Right-click and drag to create blocks Right-click on block to edit • The Start/Stop UTC times can be edited





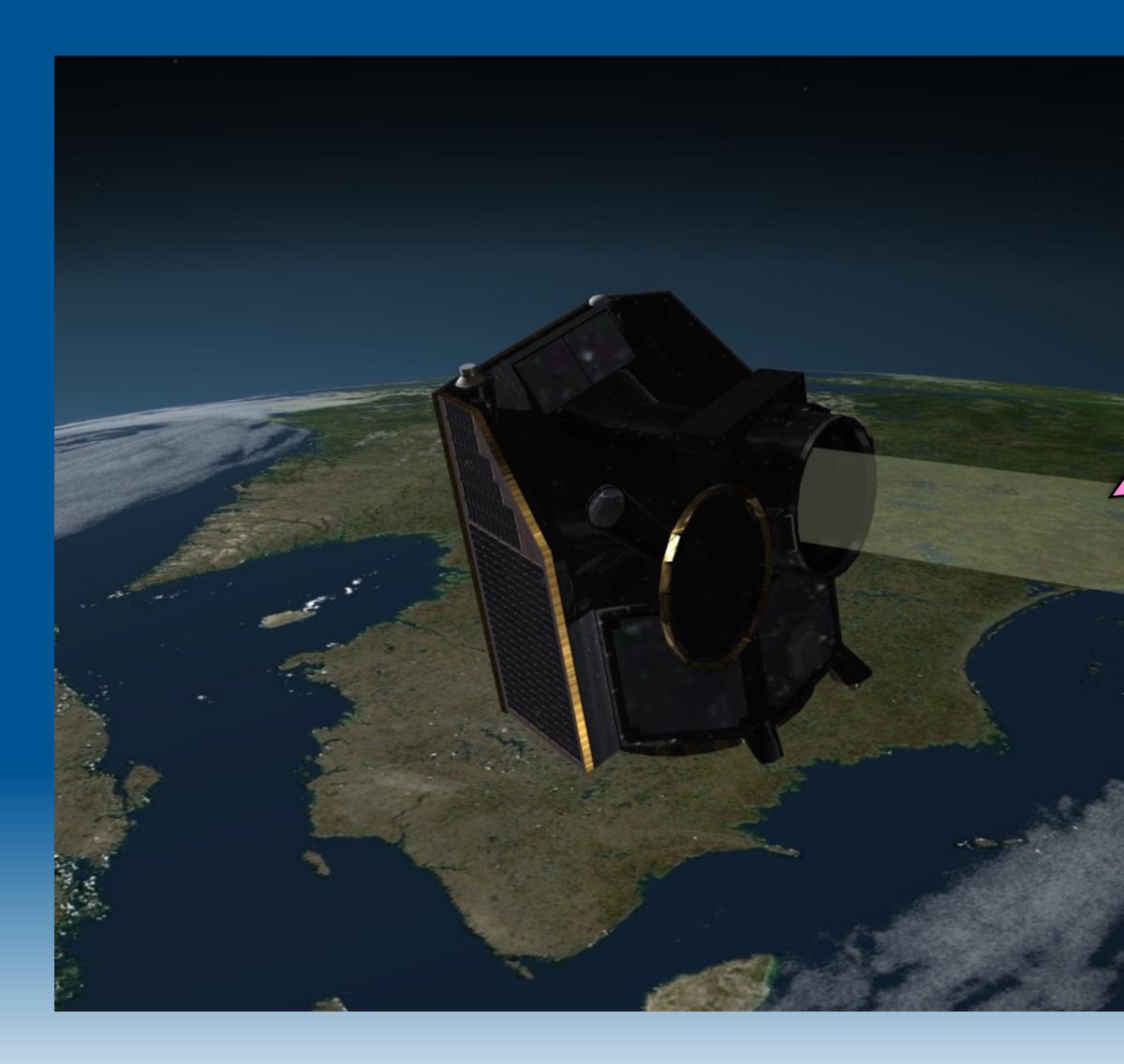








Display Instrument Field-of-View (II)







Whenever the simulation time goes through an instrument time block, the field-of-view of the telescope is displayed







Display Sunlight Ray Direction

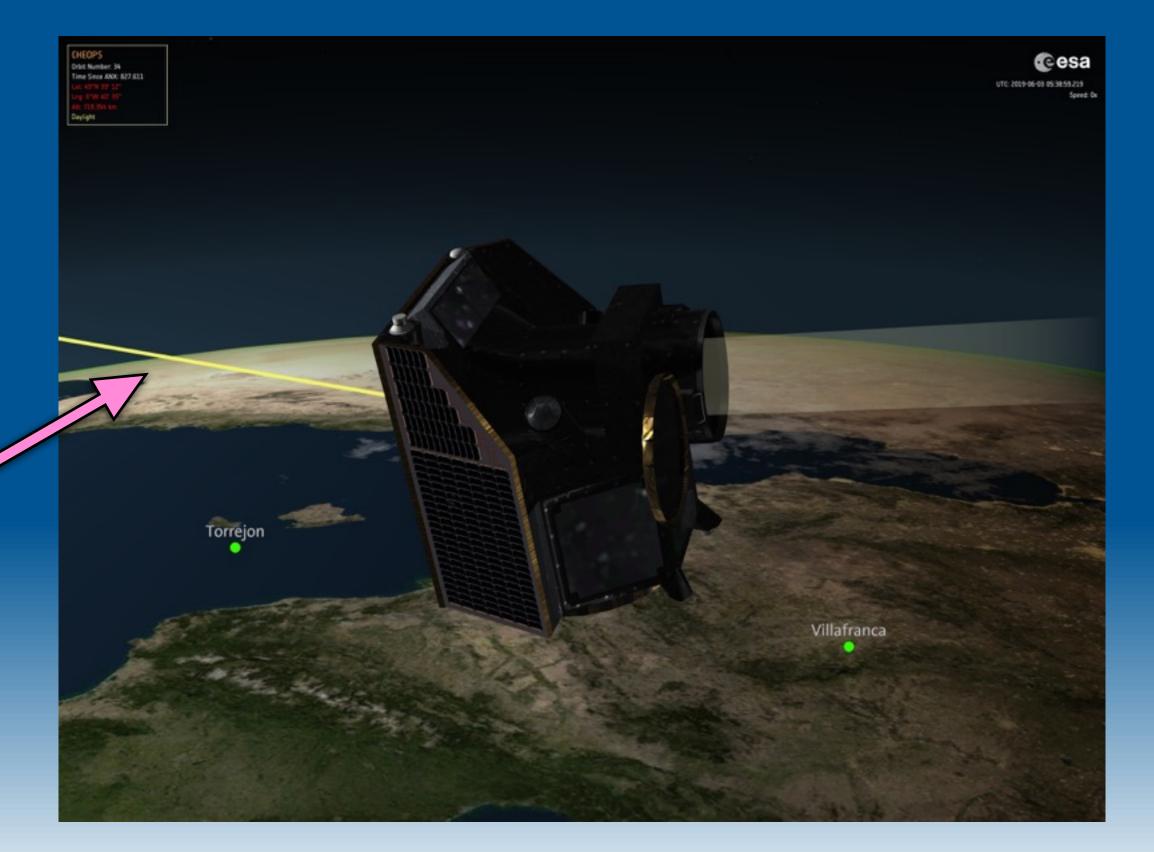
• Application —> Show Sunlight Rays

Direction to the Sun can be displayed to check satellite Sun illumination





Application	Project
Set FullScreen	F11
Show FPS	Ctrl F
Hide UI Overlay	Ctrl U
Show Sunlight Rays	5 Ctrl L
Quit	Esc
CENTTHE	



Ground Station Visibility

Ground Station visibility area is highlighted whenever CHEOPS is in visibility



• List of default CHEOPS Ground Stations can be found in file "GroundStations_Ids.txt"

SAN	/IEdit_beta_1_3_1_0_Win_x64_for_CHEOPS	>	SA
^	Name		
	cheops_def_win.bundle		
	cheops_def_win.bundle.manifest		
	EOCFI_Ids		
	GroundStations_Ids		
			-





N	IIEdit_1_3_1_0 → Repo	os > Satellites > CH	EOPS
	Date modified	Туре	Size
	09/09/2019 16:25	File folder	
	22/08/2019 20:25	BUNDLE File	5,307 KB
	22/08/2019 20:25	MANIFEST File	4 KB
	01/05/2019 15:25	Text Document	1 KB
	23/07/2019 09:57	Text Document	1 KB
-			





Support Tools

- file to EO XML GS Orbit File format
- GS Orbit File format

Example of TLE file, saved as *tle_20_DEC_2019_1.txt*

Example of input configuration file

Note: TLE files for CHEOPS mission cannot be loaded directly in SAMI as type 'TLE'. The TLE file needs to be converted EO XML GS orbit file using TLE2ORBRE. The output orbit file can then be ingested in SAMI as type 'POF', see Slide 6

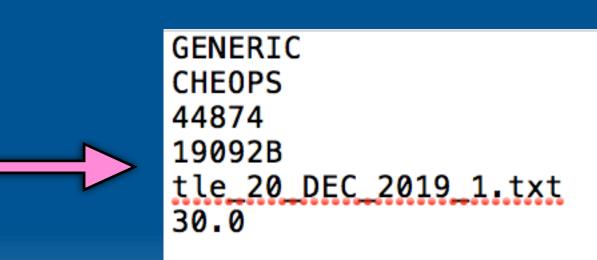




• Executable tool <u>OEM XML2OrbitFile</u> to transform from OEM XML orbit

• Executable tool <u>TLE2ORBPRE</u> to transform from TLE orbit file to EO XML

CHEOPS										
1	44874U	19092B	19354.15736	65200000046	00000-0	00000+0 0	9995			
2	44874	98.2275	175.8674 000	7499 299.9362	60.1092 1	4.56925462	258			



esa

• SAMI User Support contact e-mail sami@eopp.esa.int

SAMIEdit Quick Start Guide Desktop v1 3 4.pdf







For further details on the application interface and available features, please have a look to the SAMI Quick Start Guide