

Rosetta observations during the third Earth swingby 13 November 2009

Boresight alignment campaign and standard star observations		
Time (UTC)	Instrument and observation	
8 Nov 03:10-07:10	MIRO, OSIRIS, ALICE, VIRTIS	<i>Boresight alignment campaign:</i> determination of the relative boresight alignment of the four remote sensing instruments, using observations of the Moon
9 Nov 20:00 - 16 Nov 13:00	RPC	<i>Science:</i> Plasma and magnetospheric studies of Earth-Moon system for one week around closest approach
10 Nov 18:30-19:30	ALICE	<i>Calibration:</i> Stellar calibration with a Gru, for contemporaneous cross-comparison to Earth and Moon calibrations
10 Nov 20:30-21:30	ALICE	<i>Calibration:</i> Stellar calibration with Vega, for contemporaneous cross-comparison to Earth and Moon calibrations
10 Nov 20:30-22:30	OSIRIS	<i>Calibration:</i> Stellar calibration with both cameras (WAC and NAC) pointed at Vega for intensity calibration
11 Nov 03:00-05:00	OSIRIS	<i>Calibration:</i> Stellar calibration with both cameras (WAC and NAC) pointed at 16 Cyg for intensity calibration

Earth observations around closest approach		
Time (UTC)	Instrument and observation	
11 Nov 22:30 - 12 Nov 22:30	OSIRIS	<i>Imaging:</i> Acquire image sequence of approaching Earth over a 24-hour period
11 Nov 22:30 - 12 Nov 22:25	ALICE	<i>Calibration:</i> Obtain Earth calibration spectra
13 Nov 00:45-07:15	OSIRIS	<i>Science:</i> Search for aurorae. Earth night side targeted pointing during approach phase (pointings to Atlantic Ocean, New York, Nadir, South Pacific, and Earth's limb).
13 Nov 01:25-07:15	ALICE	<i>Science:</i> Earth night side pointing during approach, to gather Earth aurora data
13 Nov 02:00-05:40	VIRTIS	<i>Imaging:</i> Earth night side observations, simultaneously with VIRTIS-M and VIRTIS-H
13 Nov 06:10:00- 06:21:30	VIRTIS	<i>Science:</i> Earth night side limb scan for non-LTE emission and oxygen airglow studies
13 Nov 06:35-07:10	VIRTIS	<i>Science:</i> Earth day side limb scan for non-LTE emission and oxygen airglow studies
13 Nov 07:15-08:00	ALICE	<i>Science:</i> Measurement of high energy electrons while passing through Earth's magnetosphere
13 Nov 07:20-08:20	MIRO	<i>Calibration:</i> Observe the H ₂ O line in Earth's spectrum to refine MIRO's CTS spectrometer calibration
Earth closest approach at 07:45:40 UTC - 2481 km		
13 Nov 08:00-11:10	ALICE	<i>Calibration:</i> Measurements of Earth's airglow for relative calibration at extreme ultraviolet wavelengths and for a flat field

13 Nov 08:30-09:00	OSIRIS	<i>Calibration:</i> flat field images, pointing at South Atlantic, with the illuminated ocean surface on Earth's crescent filling the whole field of view.
13 Nov 09:10-09:20	OSIRIS	<i>Imaging:</i> Acquire images while pointing at Berlin, Germany
13 Nov 09:30-11:10	OSIRIS	<i>Imaging:</i> Acquire images while pointing at Earth's photometric centre and limb to limb scan
13 Nov 09:30-10:45	VIRTIS	<i>Test:</i> Earth day side observations with both VIRTIS-M and VIRTIS-H while pointing at Earth's photometric centre to verify the compression algorithm and binning algorithm performances
13 Nov 10:55-11:10	VIRTIS	<i>Calibration:</i> limb to limb scan of the Earth with only VIRTIS-H
13 Nov 14:00-14:30	NAVCAM	<i>Test:</i> test of "Asteroid flyby mode" with navigation cameras (NAVCAM)
13 Nov 14:00-14:30	VIRTIS	<i>Imaging:</i> Observations of Earth day side simultaneously by VIRTIS-M and VIRTIS-H

Moon observations; observations of the Earth-Moon system after closest approach

Time (UTC)	Instrument and observation	
13 Nov 15:25-15:50	ALICE	<i>Science:</i> Occultation of ρ Lupi by the Moon: obtain lunar atmosphere absorption spectra
13 Nov 15:25-16:25	OSIRIS	<i>Test:</i> Monitoring of the Moon's motion (tracking) as test for comet observations.
Moon closest approach at 15:40 UTC - 233 000 km		
13 Nov 15:55-16:25	VIRTIS	<i>Calibration:</i> Minimum Detectable Temperature calibration using Moon night side observation (VIRTIS-M and VIRTIS-H)
13 Nov 15:55-16:25	ALICE	Moon observations, with VIRTIS boresight on the Moon
13 Nov 16:35-17:05	ALICE	<i>Calibration:</i> Obtain baseline spectra of ρ Lupi for comparison to lunar occultation spectra obtained earlier
13 Nov 17:20-18:20	MIRO	<i>Science:</i> Attempt to detect H ₂ O on the Moon
13 Nov 17:20-18:20	OSIRIS	<i>Test:</i> Monitoring of the Moon's motion (tracking) as test for comet observations.
13 Nov 17:20-21:56	ALICE	<i>Calibration:</i> Observe the limb of the Moon, filling the ALICE FOV as much as possible, for absolute flux calibration in extreme ultraviolet (EUV).
13 Nov 18:25-21:56	OSIRIS	<i>Calibration:</i> Lunar straylight calibration (investigate off-field straylight from an extended object). <i>Science:</i> search for lunar sodium and OH tail.
13 Nov 19:21:10 - 14 Nov 08:25:00	VIRTIS	<i>Calibration:</i> Performance verification of VIRTIS-M visible channel while pointing to the Moon.
13 Nov 22:04:55 - 14 Nov 22:25:00	ALICE	<i>Calibration:</i> obtain spectra of illuminated limb of the Moon for a flat field. Several back-and-forth slew scans over the Moon.
13 Nov 22:05 - 14 Nov 22:25	OSIRIS	<i>Test:</i> Monitoring of the Moon's motion (tracking) as test for comet observations.

15 Nov 14:00-18:00	OSIRIS	<i>Imaging:</i> Observation of the Earth-Moon System when both are in the field of view of the WAC. <i>Calibration:</i> imaging of the Earth-Moon system with 4 different pointings in order to determine behaviour of 'ghosts' of bright objects in the WAC and NAC optics.
15 Nov 22:00 - 16 Nov 08:00	ALICE	<i>Calibration:</i> observe the Moon as a point source for absolute flux calibration in extreme ultraviolet (EUV).
16 Nov 15:00 - 17 Nov 17:00	RPC	<i>Test:</i> interference measurement between the Langmuir Probe (LAP) and the Fluxgate Magnetometer (MAG)
18 Nov 06:00-10:00	MIRO, OSIRIS, ALICE, VIRTIS	<i>Boresight alignment campaign:</i> determination of the relative boresight alignment of the four remote sensing instruments, using observations of the Moon