

## **Rosetta's Philae lander reactivated**

### **CNES invites you to attend first data downlink**

**The Rosetta mission's Philae lander, which will be dropped onto the nucleus of comet Churyumov-Gerasimenko in November, has been woken up from its deep-space 'hibernation'. CNES is ready to receive the first science data it sends back.**

After the Rosetta spacecraft was woken up on 20 January, today is the turn of Philae, the compact 100-kilogram lander, attached for now to the main craft, to re-establish contact with Earth. A first signal was received today at 1500 CET by the Lander Control Centre (LCC) in Cologne, Germany.

CNES President Jean-Yves Le Gall commented: "Rosetta is one of the most important space events of 2014. I'm delighted that the Philae lander has been successfully woken up, which is a source of great pride for everyone who has contributed to this remarkable project. Everything appears to be working perfectly on Rosetta, launched more than 10 years ago, which is a real technological achievement. CNES has been involved in this mission since the outset and will now be keeping a close eye on Philae from the Toulouse Space Centre and preparing for touchdown on the comet, later in the year."

**CNES invites you to join us at the Science Operations and Navigation Centre (SONC), which will play a leading role in Philae's descent and landing on the comet in November. The press visit takes place on:**

**Tuesday 15 April – 10:45 a.m. to 12:45 p.m. at the Toulouse Space Centre**

**At the event, Jean-Pierre Bibring and Hermann Böhnhardt, lead scientists for the Philae mission, will present the first data transmitted by the lander.**

**Pre-registration is necessary (places are limited) by email to Nathalie Journo [nathalie.journo@cnes.fr](mailto:nathalie.journo@cnes.fr) by Thursday 10 April at the latest**

In April, all onboard systems will be checked out to ensure that everything is working nominally and to devise solutions if anything goes wrong. CNES is closely involved in this 'post-hibernation checkout'. At the same time, the flight software that will control Philae during its descent and after landing will also be loaded.

The challenge for Rosetta is to get close up to comet Churyumov-Gerasimenko, currently 650 million kilometres from Earth, put its 10-instrument Philae lander on the surface of the nucleus and then escort the comet for more than a year as it approaches the Sun. Its aim is to explore the comet in situ and learn more about the inner structure of its nucleus and characterize its nature and composition.

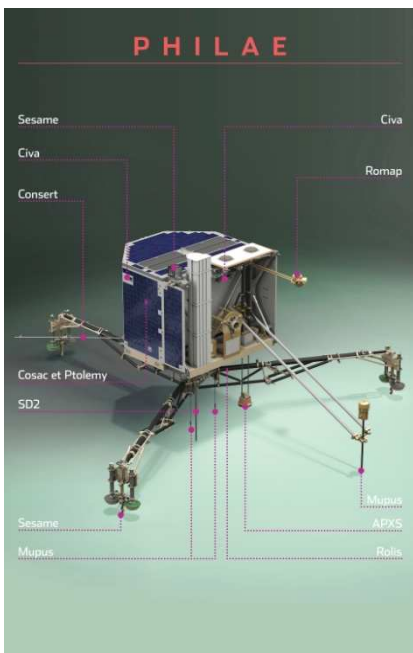
The Rosetta mission involves more than 300 scientists across Europe and 100 engineers at four closely coordinated mission centres: the RMOC in Darmstadt (ESOC) for orbiter control operations; the RSGS in Madrid (ESAC) for orbiter science operations; the LCC in Cologne (DLR)

for the Philae platform; and the **SONC (Science Operations and Navigation Centre) in Toulouse**.

The SONC is tasked with calculating safe landing trajectories for Philae, planning and tracking science operations and processing and archiving the resulting data. As from today, the SONC enters the post-hibernation operations phase. "For the next three weeks, we will be inspecting the lander from every angle via telemetry link to ensure it is ready for the big day," says Philippe Gaudon, Rosetta project leader at CNES. "By the last week of April, preparation of onboard systems will be complete. After a training phase in May and June to ready the teams for landing operations, the main task over the summer will be to select the landing site."

About 20 people at CNES's Toulouse Space Centre will be involved in preparations for Philae's descent and touchdown. Wide-ranging expertise is needed to ensure the success of this remarkable feat of technology, with experts on hand in orbital mechanics to calculate Philae's descent trajectory, onboard systems to prepare for operations and data management to process and distribute the valuable information gathered on the comet.

**The 10 instruments on the Philae lander**



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- APXS**..... Alpha Proton X-ray Spectrometer (French involvement in tests / IRAP)
- CIVA**..... Optical camera, optical microscope and IR spectrometer (French overall responsibility and expertise in stereoscopies / IAS, LAM)
- CONCERT**..... Instrument to probe the comet nucleus using radio waves (French overall responsibility and involvement in electronic units / IPAG, Latmos)
- COSAC**..... Pyrolyser and analyser (French involvement in storage and distribution of high-pressure gas and chromatography columns / Latmos, LISA)
- Ptolemy**..... Instrument to measure isotopic abundance
- MUPUS**..... Instrument to measure the density of the comet surface
- ROLIS**..... Down-looking camera
- ROMAP**..... Magnetometer
- SD2**..... Drill
- SESAME**..... Instrument to measure the electrical properties of the comet surface (French involvement / Latmos)

**Next stages in the Rosetta mission**

- April** ..... Philae post-hibernation checkout
- 21 May** ..... First manoeuvre to rendezvous with comet
- May to July** ..... Series of rendezvous braking manoeuvres
- July** ..... First 'resolved' pictures of the comet
- 6 August** ..... Rosetta goes into orbit around the comet's nucleus
- August to October** ..... Selection of landing site
- November**..... Philae lands on comet
- December**..... Rosetta begins 'comet escort' phase

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