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# GAIA satellite reveals results of its first scan of the Galaxy

**A thousand days after the launch of the GAIA satellite, ESA and the European Data Processing and Analysis Consortium (DPAC) today released the first results of the mission with a Galaxy map of unprecedented accuracy.**

This first data release comprises two star catalogues and a set of light curves of variable stars. The first catalogue contains the positions of 1.15 billion stars at accuracies of 0.5 to 0.0015 seconds of a degree, depending on the brightness of the source (one thousandth of a second of a degree is the angle at which we would see a one-euro coin 4,000 kilometres away). It also includes the ultra-precise positions of 250,000 quasars, the far-flung extragalactic objects used as geometric reference points. *“This is a new ‘snapshot’ of the heavens, the successor to the great historic catalogues compiled by Hipparcos, Tycho Brahe and John Flamsteed. It’s both the largest and the most accurate full-sky map ever produced,”* explains François Mignard, the coordinator of France’s contribution to DPAC.

The second catalogue combines measurements acquired by GAIA with older data gathered 23 years ago on ESA’s Hipparcos space mission. This long gap between acquisitions makes it possible to see how stars have moved and thus calculate their speed and distance. The catalogue contains the two million bright stars surveyed by both missions, adding two million new stellar distances three times more accurate than those obtained by Hipparcos and 20 times more sources. These results have been eagerly awaited by the astronomy community studying the physics of stars and the Galaxy.

The GAIA mission is of course far from over, as Olivier La Marle, in charge of astronomy and astrophysics at CNES, explains: *“New results will be released in the autumn of 2017, this time with the velocities and distances of the 1.15 billion stars in the GAIA catalogue—with their ‘ID cards’ (temperature, age, composition, etc.)—and of hundreds of thousands of other objects in the solar system. The accuracy of star positions will also continue to improve throughout the mission as new measurements are acquired.”* Chantal Panem, GAIA project leader at CNES, adds: *“CNES will be playing a pivotal role compiling this next version of the catalogue, GAIA DR2. An eight-person team is operating the systems producing these results that will be fed into the central database at the start of next year.”*

The DPAC consortium that performed the calculations for these catalogues is a collaboration of 450 research scientists from 20 European countries, of which nearly a quarter are working at laboratories attached to the French national scientific research centre CNRS and supported by CNES (Lagrange, GEPI, SYRTE, LERMA, IMCCE, Observatoire de Strasbourg, LAB, UTINAM, LUPM and IAP). CNES is a DPAC member and developed and operates one of the consortium’s most powerful high-performance data processing centres, the DPCC, located at the Toulouse Space Centre.

<https://gaia-mission.cnes.fr/fr/GAIA/Fr/index.htm>

<http://sci.esa.int/gaia/>

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### Contacts

Pascale Bresson  
Julien Watelet

Tel. +33 (0)1 44 76 75 39  
Tel. +33 (0)1 44 76 78 37

[pascale.bresson@cnes.fr](mailto:pascale.bresson@cnes.fr)  
[julien.watelet@cnes.fr](mailto:julien.watelet@cnes.fr)

**presse.cnes.fr**