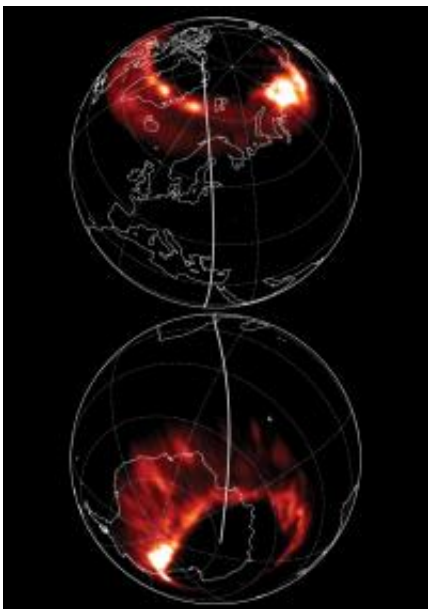


The auroras in the Northern and the Southern hemispheres are not identical (w/ Video)

July 23 2009



Asymmetric aurora. Polar VIS Earth (J. B. Sigwarth) and IMAGE WIC (S. B. Mende)

In a *Nature* letter published July 23, 2009, Norwegian researchers present evidence that the auroras in the Northern and the Southern hemispheres can be totally asymmetric. These findings contradict the commonly made assumption of aurora being mirror images of each other.

The study with the sensational results has been performed by PhD student Karl Magnus Laundal and professor Nikolai R stgaard at the Institute of Physics and Technology at the University of Bergen.

The aurora is produced due to collisions between the Earth's atmosphere and electrically charged particles streaming along the [Earth's](#) geomagnetic field lines. "Since these processes occur above the two hemispheres, both the Northern and the Southern light are created. So far researchers have assumed that these auroras are mirror images of each other, but our findings show that this is not always the case," professor Nikolai R stgaard says.

The full version of this animation can be downloaded [here](#).

The researchers at the University of Bergen have used data from the two NASA-satellites IMAGE and Polar to examine the Northern and the Southern light. In the Nature letter they present several possible explanations to the unexpected result.

"The most plausible explanation involves electrical currents along the magnetic field lines. Differences in the solar exposure may lead to currents between the two hemispheres, explaining why the Northern and the Southern light are not identical," PhD student Karl Magnus Laundal says.

In addition to yielding new knowledge about the aurora, the results are important for other researchers studying the near-Earth space.

"Our study shows that data from only one hemisphere is not sufficient to state the conditions on the other hemisphere. This is important because most of our knowledge about the [aurora](#), as well as processes in the upper atmosphere in the polar regions, is based solely on data from the [Northern hemisphere](#)," R stgaard points out.

Nature has also chosen to use an image of the Northern and Southern light on their front cover, taken from the letter of R stgaard and Laundal.

More information: Laundal, K.M. and R stgaard, N., Asymmetric auroral intensities in the Earth's Northern and Southern hemispheres, *Nature* 460, 491-493 (23 July 2009); [doi:10.1038/nature08154](https://doi.org/10.1038/nature08154)

Source: University of Bergen

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