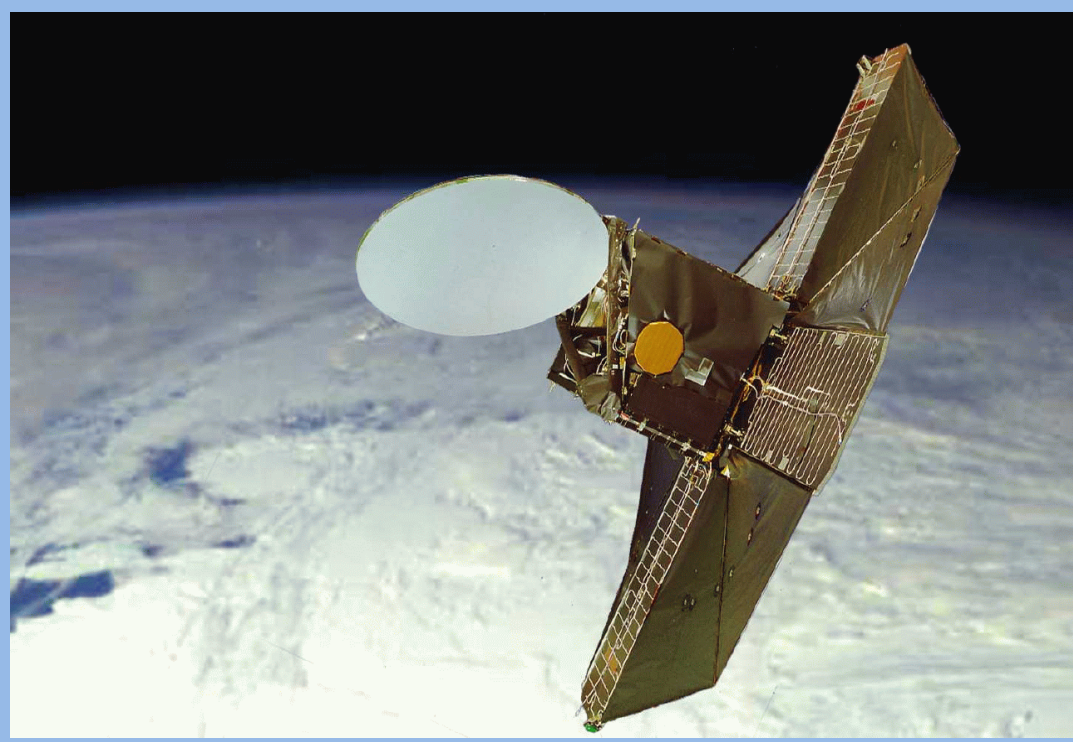


Odin astronomy and aeronomy

Odin is a Swedish-led submm/mm wave spectroscopy astronomy and aeronomy satellite project supported by scientists and space agencies in Canada, Finland, France, and Sweden.



Important Onsala/Chalmers contributions are:

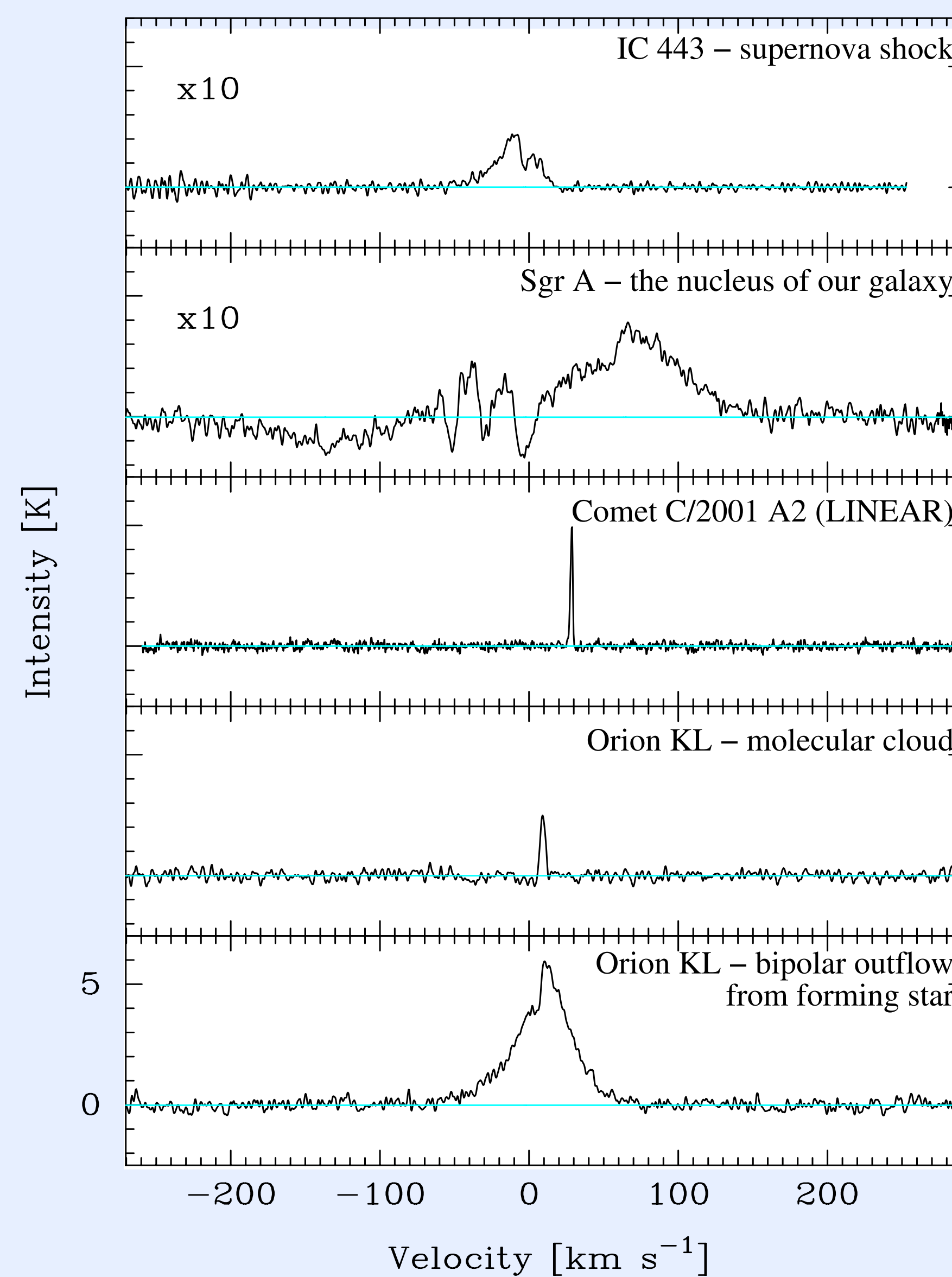
- receiver integration and optimisation
- development and operation of the Odin data centre at Onsala
- science planning and scientific analysis
- the aeronomy and astronomy mission scientists



On 20 February 2001 Odin was launched from Svobodny in far-eastern Russia.

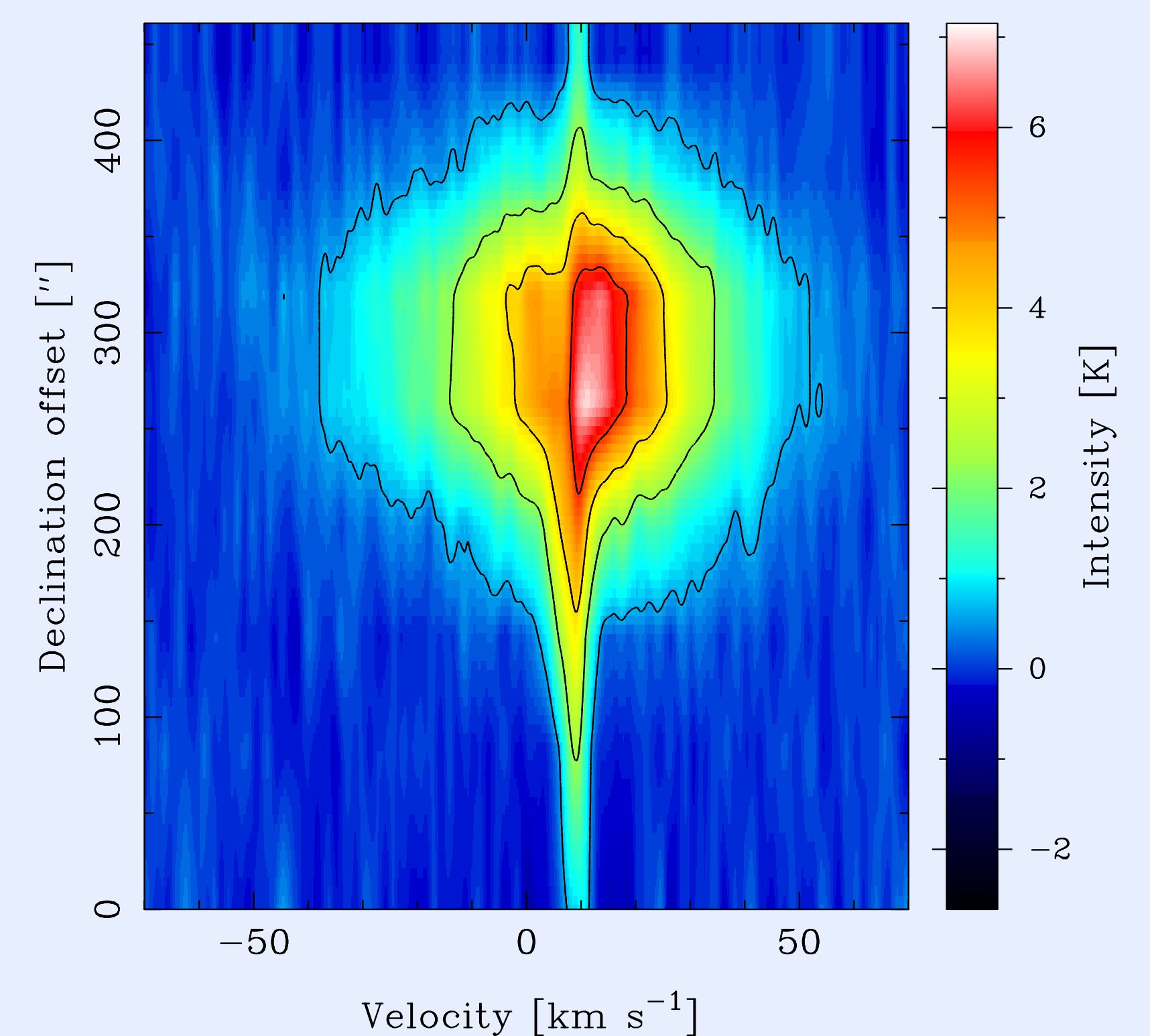
The Swedish Space Corporation is prime contractor, also responsible for the Odin operation.

Odin observes H₂O at 557 GHz



Odin has observed H₂O in several comets and in a selection of galactic molecular clouds exhibiting different physical conditions and processes. Simultaneously, deep searches for O₂ have been done.

H₂O velocity structure across Orion KL



H₂O in Orion: a high velocity outflow/shock and extended molecular cloud emission.

Source	Odin	SWAS
TMC-1	0.7	30
L 134 N	1.6	30
ρ Oph	0.5	3

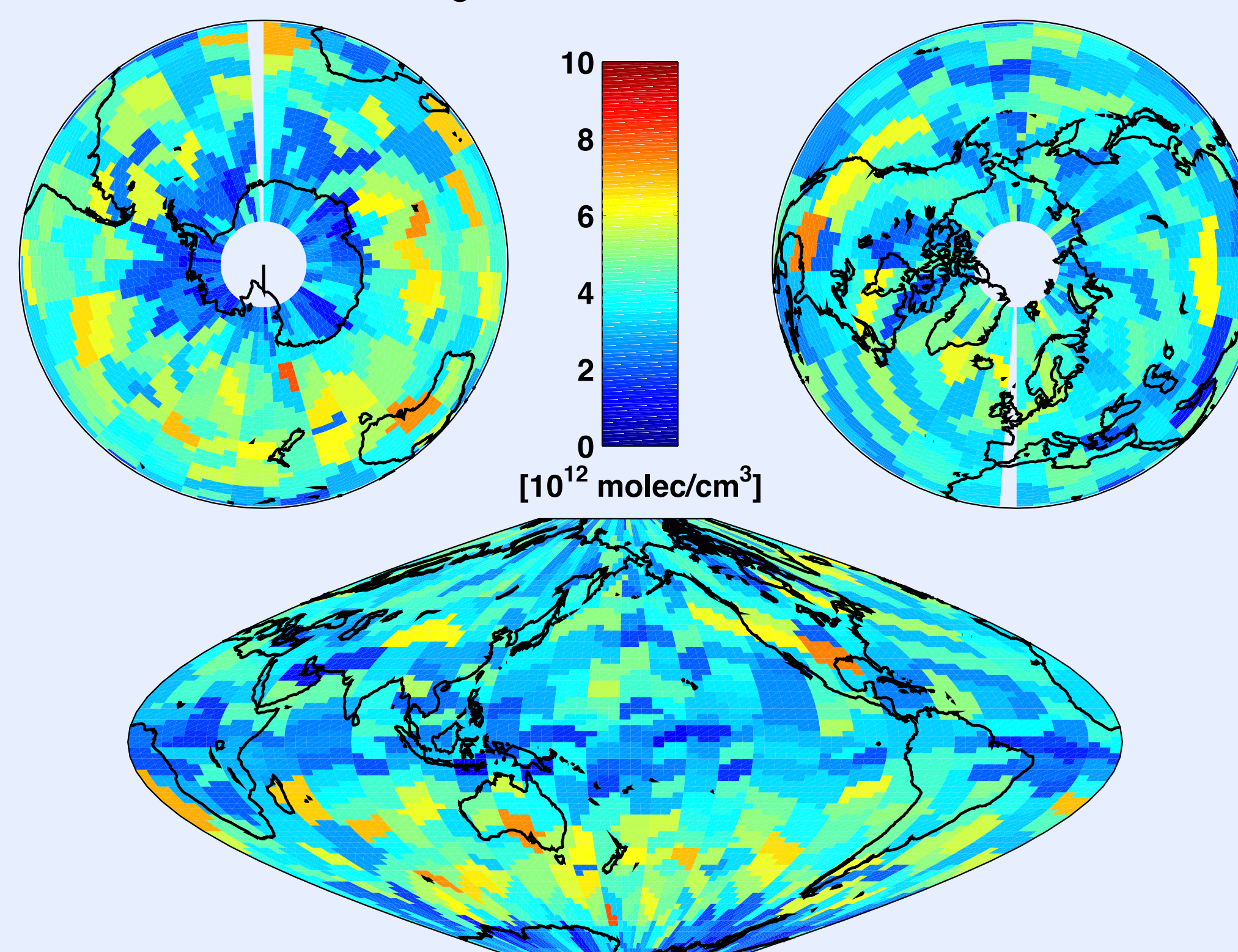
O₂ abundance limits $\times 10^7$

The very low O₂ abundance limits ($< 10^{-7}$ vs H₂) pose severe problems for chemical model predictions (10^{-5} to 10^{-4}).

Odin quick facts:

- 1.1 m high precision telescope
- four cryo-cooled, tunable submm mixers
- cryo-cooled HEMT receiver at 119 GHz
- acousto-optical spectrometer (BW=1040 MHz)
- two auto-correlators (BW=100–800 MHz)
- UV-optical-IR spectrometer (OSIRIS)

21 August 2001 22 km SM-AC2ab O3



Global distribution of O₃ at an altitude of 22 km as measured by the radiometer on August 21, 2001. The expected low ozone values over the south pole are clearly shown by the measurements.