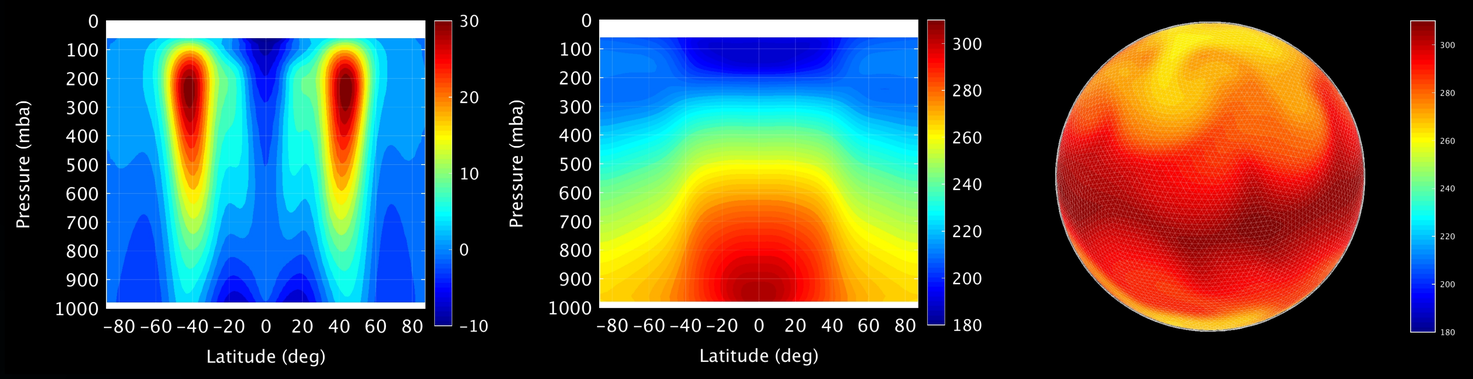
THOR

THE RISE OF A NEW GLOBAL CIRCULATION MODEL

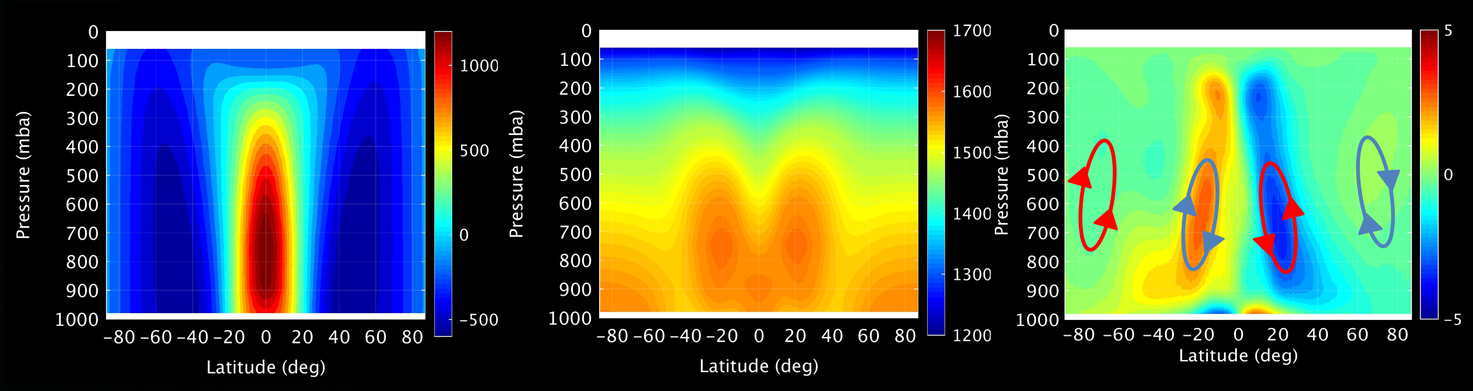
Earth simulation– Held & Suarez 1994

- Averaged zonal winds (m/s).
- Averaged temperature (K).
- Surface temperature (K).

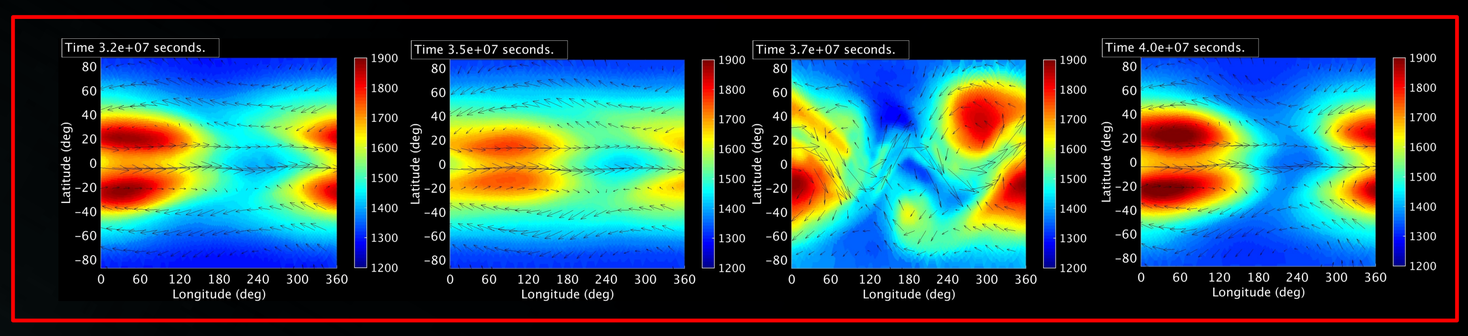


Hot Jupiter simulation– Menou & Rauscher 2009

- Averaged zonal winds (m/s).
- Averaged temperature (K).
- Averaged mass stream function (10^{13} Kg/s).



Snapshots of the zonal winds and temperature at 600 mba (sub-stellar point at 0º longitude).



THOR is the first 3D atmospheric model that solves the deep-atmosphere non-hydrostatic Euler equations in an icosahedral grid dedicated to the study of planetary atmospheres.
Our new multi-planet platform will be of the uttermost importance to interpret and understand observational data from previous and future observational missions.

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Conclusions

a) We have developed a new theoretical and modelling platform which is able to simulate planetary atmospheres. Its flexibility makes it ideal to study planetary atmospheres.
b) The model is able to simulate the atmosphere of Earth and the atmosphere of a hot Jupiter. It has therefore successfully passed two important benchmark tests.
c) THOR and the tools to explore the results will be open-source.

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EEG EXOPLANETS & EXOCLIMES GROUP

ESP EXOCLIMES SIMULATION PLATFORM