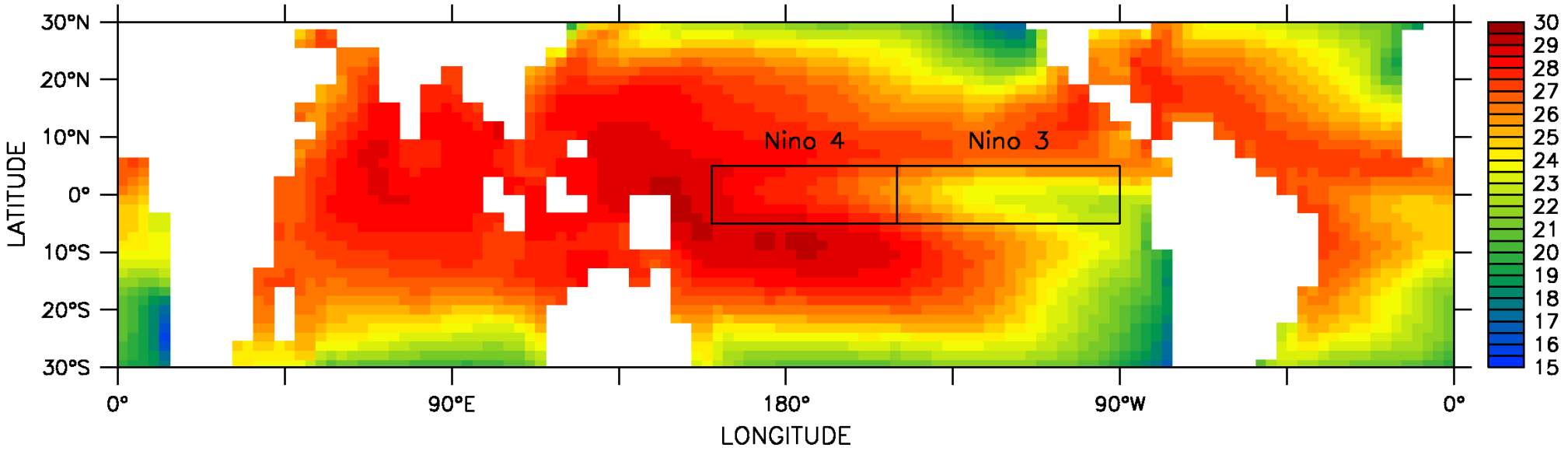
The CSIRO Mk3L climate system model

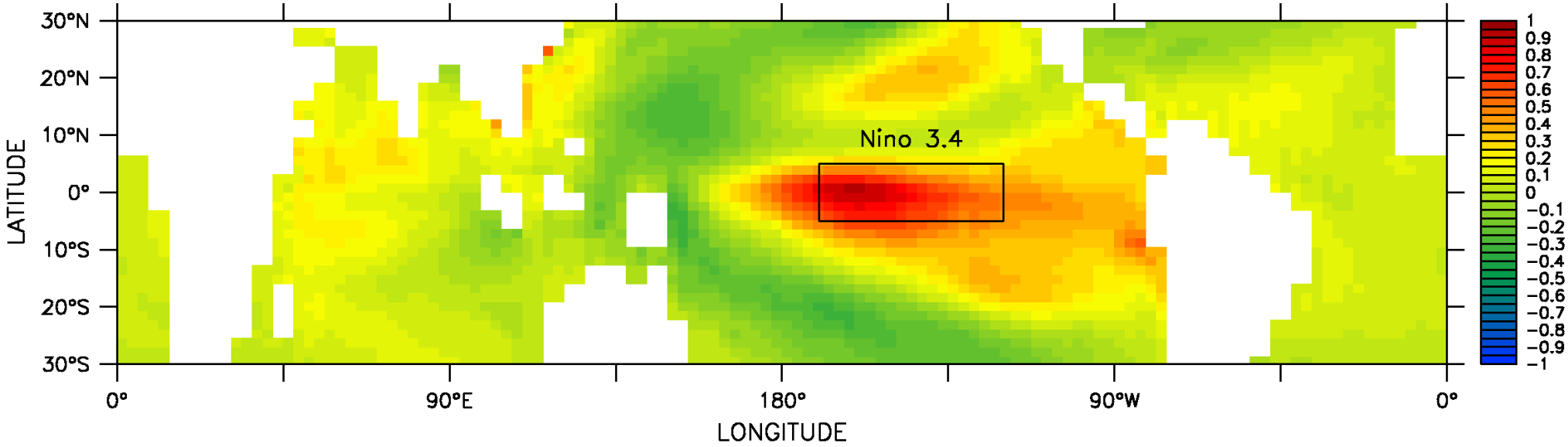
- Fast, portable version of CSIRO's climate model
- Designed to enable study of climate variability and change on millennial timescales
- Coupled atmosphere-ocean general circulation model:
  - Atmosphere: R21 ($5.6^\circ \times 3.2^\circ$), 18 vertical levels
  - Ocean: $2.8^\circ \times 1.6^\circ$, 21 vertical levels
  - Sea ice: Dynamic-thermodynamic
  - Land surface: Static vegetation
  - Can run without flux adjustments
  - An "AR 3.5" model/"EMIC on steroids"
- 1000 years in two months on the current NCI National Facility

Future plans

- Towards an *earth* system model:
  - CABLE land surface model
  - CASA-CNP terrestrial biogeochemical model
  - Matear marine biogeochemical model
  - LPJ dynamic vegetation model
  - Rotstayn aerosol model
  - ... ?
- Towards a *community* model:
  - Source code is freely available (subject to copyright restrictions)
  - Community maintains and develops the model itself
  - Infrastructure: subversion, wiki, email list, user workshops?
  - `http://www.tpac.org.au/main/csiromk3l`



(a) Annual−mean SST



(b) EOF1 of monthly SST anomalies

Question

What are the mechanisms that drive changes in ENSO behaviour?