

History of Earth Simulator Collaboration.

- In December 2001, Professor Alan Thorpe, Director of the NERC Centres for Atmospheric Science, led a delegation of Hadley Centre and NERC climate scientists to Japan to take part in the first UK-Japan Expert workshop.
- The Expert Meetings' initiative came out of a discussion between Professor Imura and Lord Sainsbury in April 2001. The idea was to bring together top scientists from both countries in particular areas of strength and importance in the form of workshops. It was hoped that by bringing these scientists together, new collaborative projects would result. The first two areas of collaboration identified were **climate change** and nanotechnology.
- The Climate Change workshop in December 2001 was a great success. The main outcome was an agreement to pursue both longer-term research links and to prepare collaborative bids in response to the imminent Japanese (MEXT) Announcement of Opportunity for funding bids to use the Earth Simulator for climate modelling.
- During 2002 a new Director-General of the Japanese Earth Simulator was appointed – Professor Sato. He visited the UK in August 2002 and indicated that there were now two separate possibilities for UK-Japan collaboration in climate change modelling. The first was with Prof Sumi at the University of Tokyo under the MEXT grant; his grant has now been awarded. The other was via a new potential project to pursue a “grand challenge” scientific problem in global change using computer time under the immediate control of Professor Sato himself. This would be set up in terms of a formal Agreement between the Earth Simulator Centre and UK groups.
- In September 2002 the UK team (joint NERC and Hadley Centre) visited Japan for one week and established that the two separate projects would indeed go ahead. **During discussions with Professor Sumi it was agreed that the MEXT project would be in pursuit of climate change predictions to be jointly prepared for the IPCC Fourth Assessment Report in 2007. This project is called “FUJI” – the First UK Japan model Intercomparison. This meeting represented the final step in agreeing that the joint UK-Japan research will go ahead.**
- In September 2002 the UK team also met with Prof. Sato and agreed the basis of a longer term collaboration with the Earth Simulator Centre. As a result of this meeting **a formal Agreement was signed in December 2002 between the Earth Simulator Centre, the Hadley Centre and NCAS/CGAM to ‘promote research cooperation with a view to contribute to the advancement of scientific research and technological development in ocean and earth sciences’.** The specific areas already identified are: (i) promotion of the climate change science, and (ii) development of ambitious integrated models of the atmosphere, ocean, sea ice and land. **This Agreement is valid for 5 years and has the potential to provide very significant access to**

the Earth Simulator, and huge potential for UK/Japanese breakthrough in global climate change modelling.

- In February 2003 the UK technical team (1 Hadley Centre, 2 NCAS/CGAM) visited the Earth Simulator for one month and successfully ported the UK climate model onto the Japanese machine and started to build the infrastructure needed to enable research to be pursued. This was the first technical visit and it was a considerable success.
- The next UK technical visit by CGAM/NCAS staff to Japan took place during the last three weeks of May 2003 with the aim of performing very high resolution simulations with the Hadley Centre atmosphere model to explore regional climate variability associated with El Nino and climate change.
- **Dr. Keiko Takahash, Prof. Sato's assistant at the Earth Simulator Centre has just completed a 2-week fact finding visit to the Hadley Centre and NCAS/CGAM to discuss the potential areas of collaboration under the Agreement with the Earth Simulator Centre.**
- NIEES and NCAS are organised an **Earth System Modelling workshop at Cambridge on 1 to 3 October 2003.**
- **Southampton Oceanography Centre.** Trevor Guymer visited the Earth Simulator as part of a UK delegation in December 2001 and met with Prof Awaji (who is part of the **JAMSTEC Frontiers Research System on Global Change project**) in London in August 2002. Since then there has been an exchange of ideas between SOC, Met Office, ECMWF and Prof Awaji about a possible collaboration on ocean modelling and data assimilation using the Earth Simulator which SOC hope to take forward during the next few months.