



Sunrise at Scott Base, McMurdo Sound, Antarctica in late September 2006. At the end of the polar night, the sun returns to Antarctica. Because it is still very low, red and orange colours dominate. With the end of the polar night, the sun brings the energy needed in the chemical processes that cause the large Ozone depletion leading to the known phenomenon of the 'Ozone hole' over Antarctica. The protection of the ozone layer was agreed through the Vienna Convention and the Montreal Protocol signed in 1985 and 1987 respectively. Observations of trends in Ozone have since been a scientific focus, e.g. of the SPARC LOTUS activity (see report on page 8).

Photo credit: Katja Riedel Photography

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SPARC well represented at climate conference in Germany

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In collaboration with the United Nations Office of Outer Space Affairs (UNOOSA), the German Aerospace Center (DLR) organized a compact Conference on Climate Change (CCC2018), for the second time after 2016. It took place in Cologne, Germany, from 17 to 19 April. **Hansjörg Dittus**, responsible for Space Research and Technology on DLR's executive board, had initiated the series and opened this year's realization.

Under the title *Atmospheric research for understanding and mitigating climate change*, the conference aimed at bringing together renowned scientists, space agencies and interested parties with United Nations entities such as UNOOSA, UNSPIDER, UNFCCC, WMO and GCOS in order to provide a discussion forum to elaborate on the substantial challenges faced in atmospheric climate research. The intention was an open exchange of ideas to facilitate the implementation of suitable measures to support the requirements as outlined in the Paris agreement.

The opening session contained a number of programmatic contributions, among them a televised speech by **Petteri Taalas**, Secretary-General of WMO, about the role of WMO in the international climate agenda. The following four science sessions contained 30 invited overview presentations including three keynote lectures (cf. full programme under: www.sparc-climate.org/ccc2018/). **Thomas Stocker**, former co-chair of IPCC working group I, quantified the role of the world oceans for climate change and stressed the importance of continued ocean services. On the second day, **David Fahey** (SPARC SSG member during 2007-2013) thoroughly reviewed how the knowledge about the climate system improved, not the least by combining sophisticated airborne and space-borne measurements with model simulations and through international cooperation, *inter alia* maintained by WCRP and its core projects, among them SPARC. **Ottmar Edenhofer**, past co-chair of IPCC working group 3, lectured about the economic effects of climate change and argued that a complete phasing-out of coal combustion were both necessary and feasible.

Several colleagues, who are or were engaged in various SPARC activities, highlighted

some of the many facets which are considered relevant for the current climate and envisaged trends. **Thomas Birner** (incoming co-lead of the FISAPS activity), introduced historically the circulation regimes of Hadley and Ferrel cells and presented simulation results indicating a future widening of the tropical belt with easterly winds. **William Collins**, who directs the emerging activity SLCFs, discussed the climate sensitivity due to short-lived air constituents termed "short-lived forcers" and introduced planned climate scenario calculations. **Bruce Anderson** reviewed the climatic impacts of aviation and reported results from joint American-German airborne campaigns, when the composition of exhausts from various fuel types was measured systematically.

In between the overview presentations, there was ample opportunity for discussion. Contributors included SPARC oriented colleagues of the DLR-Institut für Physik der Atmosphäre (IPA), as **Veronika Eyring** (chair, Coupled Model Intercomparison Project of WCRP), **Hans Schlager** (incoming co-chair, ACAM activity) and **Christiane Voigt** (OCTAV-UTLS emerging activity). Numerous scientists from research laboratories and university institutes in Germany and neighbouring countries presented their work on posters. **Hans Volkert** described the function of the SPARC-office which had started operations last January at its forth location in Oberpfaffenhofen, after 25 successful years in Paris, Toronto and Zurich.

Markus Rapp, director of DLR-IPA, concluded CCC2018 by summarizing highlights from the presentations. He regarded the event as a German contribution to international scientific cooperation following the agreement at COP-21 in Paris. The intended third CCC-realization in 2020 demonstrates continued concern and interest of the German space and climate research community.



Figure 14: Snapshots from CCC2018 - DLR executive board member H. Dittus amidst contributors related to SPARC: Thomas Birner (FISAPS), Veronika Eyring (ESMVal), Markus Rapp (host of SPARC-office), Hansjörg Dittus (CCC initiator), Bruce Anderson (composition) and Christiane Voigt (OCTAV-UTLS), David Fahey (former SSG member; left to right). (Photos: Timm Bourry; collage: Hans Volkert)