1. What are the session key findings? What are the new Lesson(s) learned / Scientific progress (since AR5 release, if relevant)?

The session featured three keynote talks, on space-based and ground-based climate observing systems and on sea level rise as an integrated indicator of climate change, respectively. These papers highlighted the critical importance of climate-quality observations, of their continuity and of the need to correct the gaps and deficiencies of the climate observing systems. For example, global and regional sea level changes help validate climate models, satellites support over 50% of GCOS Essential Climate Variables (ECVs) and the other half are supported with in situ data. The whole issue of climate change relies on the existence and robustness of observations. There has been significant progress in observing systems and the production of long-time series of many ECVs, thanks to the effort of many international organizations and programs. This progress is reflected in the IPCC AR5.

2. What are the major knowledge Gaps and Research Needs identified in the session?

The session noted the insufficient emphasis placed on climate observing systems in the Conference documents. The idea seems to prevail that humankind knows enough about climate and climate change, thanks to a fully-fledged climate observing system, so that the need for improved observations and continued monitoring is somehow neglected or underestimated. In fact the current climate observing system is far from being perfect or even complete, and significant efforts and investments are needed to ensure its continuity and improvement. This is necessary both to better understand the processes at work, to ensure early detection of unexpected changes and to improve our predictive capabilities.

3. Did the session discuss/identify promising approaches in the fields of Adaptation and Mitigation, or both?

Adaptation and mitigation were not in the scope of the session.
4. Are there take-home messages from the session?

The main take-home message is enunciated under §2 above: “The current climate observing system is far from being perfect or even complete, and significant efforts and investments are needed to ensure its continuity and improvement. This is necessary both to better understand the processes at work, to ensure early detection of unexpected changes and to improve our predictive capabilities.” This message is addressed to policy-makers, the general public and the media altogether.

5. Are there Important Quotes from the session?

“Satellite data today are absolutely fundamental for climate observations. Over half of the 50 Essential Climate Variables are derived directly and solely from satellite data, while most of the rest also depend heavily on them. Satellites today are the foundation of climate observations. » (S. Briggs)

6. Please include any other remark that you might have.