**GCOS AOPC Task Team on the instigation of a GCOS Surface Reference Network**

**Background**

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| AOPC-22 (Exeter, UK, March 2017) agreed on the creation of a dedicated task-team to scope a potential GCOS global surface reference network. The potential for such a network has been proposed by GCOS AOPC and by the Commission for Climatology. A white paper has been developed by members of the community at the request of these parties, and is to be submitted for publication. This Task Team is charged with taking this forwards towards practical implementation providing a concrete roadmap as to what would be required and to canvas stakeholders. Working models on which to base deliberations include the GCOS Reference Upper Air Network, US Climate Reference Network, and Global Cryospheric Watch.**Membership** Chair - Howard Diamond- USAAOPC Representative – Phil Jones - UKGRUAN Representative – Peter Thorne – IrelandGSN Representative – Tim Oakley - UKCBS/WIGOS/CIMO Representative – Andrew Harper – New ZealandNWP Representative - Jiankai WANG - ChinaBIPM representatives –Andrea Merlone - ItalyClimate scientist representatives – Victor Venema - GermanyTOPC : Nigel Tapper - AustraliaSatellite : (Bojan Bojkov – Germany)Region I representative: Rachid Sebbari -Maroc GCOS Secretariat: Caterina Tassone CCl Secretariat: Peer Hechler**Proposed Terms of Reference**  |
| **(as approved by AOPC-22 and email xx/xx/2017)****Scientific charge**

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| 1. Create a scientifically robust basis for a proposed network spatial composition, taking into account fairness in national contributions and the need for globally representative measurements.
2. Accounting for stakeholder needs including inter-alia climate monitoring, process understanding and understanding remaining measurements (including space-borne measurement systems), define a robust siting rationale.
3. Propose a phased implementation that ‘starts small, but starts’ and builds over time to a holistic set of measurements of all relevant ECVs at each site to the extent practicable.
4. Alight on a potential governance structure in collaboration with key stakeholders.
5. Propose one or more management options that undertake day-to-day operational oversight and ensures a globally traceable, comparable network of measurements, recruiting possible host institutions.
6. Provide indicative costings on the proposed solutions sufficient to inform a decision as to whether to move forwards
7. Address additional needs identified by the group and agreed with AOPC as they arise.

**Modus operandi**1. The task team shall exist for an initial period of two years.
2. The task team shall work primarily remotely, facilitated by GCOS secretariat. It is expected that an initial ‘in person’ meeting will be organized to discuss and agree the work-plan and deliverables, further meetings will be decided as required.
3. Within 3 months of the initiation of the task-team a detailed work plan and deliverable will be agreed.
4. The task team shall work in conjunction with relevant groups within WMO to ensure broad buy-in including CCl, WIGOS and CBS.
5. The task team chair shall be expected to report annually on progress to AOPC by means of a brief written report and, if support available, verbal reporting in person.
6. The task team shall be expected to lead the production of a final report (implementation plan) which may form the basis for a decision as to whether, and if so how, to proceed with a GCOS Surface Reference Network.
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**Background documents** |

**White paper**

[**http://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/12\_reference\_networks\_white\_paper.pdf?X5m5GtgVl1hoc0qAYiJ3mZEK8K\_22O5R**](http://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/ckeditor/files/12_reference_networks_white_paper.pdf?X5m5GtgVl1hoc0qAYiJ3mZEK8K_22O5R)

**GRUAN documentation**

The GCOS Reference Upper-Air Network (GRUAN) GUIDE,

[https://library.wmo.int/opac/index.php?lvl=notice\_display&id=15182](https://library.wmo.int/opac/index.php?lvl=notice_display&id=15182%20)

The GCOS Reference Upper-Air Network (GRUAN) MANUAL

<https://library.wmo.int/opac/index.php?lvl=notice_display&id=15181>

GCOS Reference Upper-Air Network (GRUAN): Justification, requirements, siting and instrumentation options - *April 2007*

<https://library.wmo.int/opac/index.php?lvl=notice_display&id=12841>

Bodeker, G.E., S. Bojinski, D. Cimini, R.J. Dirksen, M. Haeffelin, J.W. Hannigan, D.F. Hurst, T. Leblanc, F. Madonna, M. Maturilli, A.C. Mikalsen, R. Philipona, T. Reale, D.J. Seidel, D.G. Tan, P.W. Thorne, H. Vömel, and J. Wang, 2016: [Reference Upper-Air Observations for Climate: From Concept to Reality.](http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-14-00072.1) *Bull. Amer. Meteor. Soc.,* **97**, 123–135, doi: 10.1175/BAMS-D-14-00072.1.

**USCRN**

Diamond, H.J., T.R. Karl, M.A. Palecki, C.B. Baker, J.E. Bell, R.D. Leeper, D.R. Easterling, J.H. Lawrimore, T.P. Meyers, M.R. Helfert, G. Goodge, and P.W. Thorne, 2013:[U.S. Climate Reference Network after One Decade of Operations: Status and Assessment.](http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-12-00170.1) *Bull. Amer. Meteor. Soc.,* **94**, 485–498, doi: 10.1175/BAMS-D-12-00170.1.

<https://www.ncdc.noaa.gov/crn/documentation.html> - USCRN documentation

**Global Cryosphere Watch**

<http://globalcryospherewatch.org/cryonet/site_types.html>