WORLD METEOROLOGICAL ORGANIZATION

Climsoft – MCH co-ordination meeting

13-17 May 2019, Reading, UK

Final Outcome Report

Geneva, May 2019

1. Opening

The meeting was opened at 9 a.m. on Monday, 13 May 2019. Prof Roger Stern, University of Reading, extended a warm welcome to the meeting participants. Mr Johannes Cullmann, Director, Climate and Water Department addressed the meeting remotely, highlighting the needs and opportunities for the climate and hydrological communities to join forces where appropriate and expressing his expectations on meeting outcomes including an analysis of the current status of data management systems used in both communities, a vision for the future and a plan how to arrive there.

Meeting participants introduced themselves during a short tour de table.

2. Organisation of the meeting

The meeting was moderated on a rotational basis with contributions from all participants. The work plan for the meeting (see Annex 1) was agreed with no revisions. The meeting agreed on its hours of work and other practical arrangements. The list of participants is presented in Annex 2.

Workshop outcomes have been reflected on the GitHub platform:

https://github.com/opencdms/opencdms-project/wiki

3. WMO CDMS strategy and status of, and plans for, Climsoft and MCH

Mr Peer HECHLER gave an overview presentation on WMO CDMS strategy. The presentation was largely based on slides from former CCl Expert Team on Climate Data Management Systems (ET CDMS) Chair and Co-Chair Messrs Denis STUBER and Bruce BANNERMAN. Mr HECHLER highlighted current data management requirements and the fragmented approach observed regarding underpinning data management systems for climate and hydrology domains. ET CDMS drafted a WMO CDMS strategy concept that has been endorsed by the Commission for Climatology in April 2018 (Res.4 – CCl-17). The overarching principle of the strategy concept is collaboration (instead of further fragmentation) and one of the strategy's key elements is the development of a single open source reference CDMS.

Messrs Samuel MACHUA, Roger and David STERN and Ian EDWARDS introduced Climsoft CDMS including history, key characteristics, its link to applications provided mainly through R-INSTAT package, current Climsoft implementation status and a road map to achieve full compliance with WMO CDMS Specifications (WMO-No. 1131, WMO 2015) under an open source development framework.

Likewise, Mrs Etna CERVANTES and Messrs Eduardo PORRAS and Carlos CERVANTES and Nirina RAVALITERA introduced MCH history, key characteristics, linked applications and current implementation status.

Ms Lucia FALCINELLI and Mr Dave MILLS introduced a project in Bolivia, thereby illustrating data management aspects. Mr Jose GUIJARRO presented a climate statistics and homogenisation software package (Climatol) applied on MCH data.

4. OpenCDMS: Prospects of Climsoft and MCH collaboration

Note: The acronym OpenCDMS stands for an open source climate and hydrological data management system.

The meeting participants identified and discussed extensively options for the further development of Climsoft and MCH with a focus on OpenCDMS:

Option 1: Develop roadmaps for both MCH and Climsoft to conform with WMO CDMS Specifications independently (no OpenCDMS).

This option has been identified as the default option, implying to go ahead with a fragmented approach but with more communication encouraged among both teams including exploring ways to

(i) make MCH hydrology components available in Climsoft and
(ii) link R-INSTAT (with Climatol software package integrated) to MCH

to increase user communities and broaden applications.

Option 2: Continue to support Climsoft and MCH users independently whilst collaborating on OpenCDMS to meet the full specifications.

This option implies to facilitate use of existing functionality and programmes of both systems for the new OpenCDMS project and to stop Climsoft and MCH development upon availability of the new OpenCDMS system with full Climsoft and MCH functionality allowing users of both systems to migrate easily.

Option 3: Agree on moving forward together with either Climsoft (Visual Basic) or MCH (Pascal) to achieve conformity with WMO Specifications.

Meeting participants agreed to pursue option 2 above with the following understanding (Spanish translation included)(a schematic of option 2 is provided in Annex 3):

JOINT STATEMENT OF THE MCH AND CLIMSOFT TEAMS

Both teams agree to:

- Work together to create an OpenCDMS solution that aims to start addressing the current fragmented approach with multiple CDMSs (see option 2 above)

- *Trabajar conjuntamente para crear una solucion OpenCDMS encaminada a enfrentar la actual fragmentacion con multiples CDMSs (ver la opcion 2 mas arriba)*

- Work to attract additional resources, including funded and unfunded contributions, to undertake the core work on OpenCDMS and also to increase activities within MCH project and Climsoft project (Climsoft plus R-INSTAT) that directly benefit OpenCDMS

- Trabajar para atraer recursos adicionales, incluyendo contribuciones financiadas y no financiadas, para llevar a cabo el trabajo basico sobre el OpenCDMS y tambien incrementar las actividades de los proyectos MCH y Climsoft (incluyendo R-Instat) que beneficien directamente el OpenCDMS

- Work through an open source approach to ensure a free and sustainable CDMS for all users, especially NMHSs, and to enable (i) wider participation, especially from contributors based in developing countries, (ii) peer review, and (iii) attraction of additional expertise

- Trabajar mediante una aproximacion open source para asegurar un CDMS gratuito y sostenible para todos los usuarios, especialmente SMHNs, y facilitar (i) una mayor participacion, especialmente de contribuciones de paises en desarrollo, (ii) la revision por pares, y (iii) la atraccion de expertos adicionales

- Make OpenCDMS an attractive proposition by developing a new graphical user interface using modern technologies

- Hacer el OpenCDMS una propuesta atractiva mediante el desarrollo de una nueva interfaz grafica de usuarios usando modernas tecnologias

- Continue the development of both the MCH and Climsoft projects and not discontinue either project until all required capabilities are available through OpenCDMS, and users can be migrated

- Continuar el desarrollo de ambos proyectos MCH y Climsoft, y no interrumpirlos hasta que todas las funcionalidades requeridas esten disponibles en el OpenCDMS y los usuarios puedan migrar al nuevo sistema

- Aim that users of MCH and Climsoft do not need extensive retraining in order to use OpenCDMS

- Procurar que los usuarios de MCH y Climsoft no necesiten un extenso entrenamiento para poder usar el OpenCDMS

- Reuse existing code from both projects when appropriate

- Reutilizar el codigo existente en ambos proyectos siempre que sea adecuado

- Aim to prove that OpenCDMS is a viable solution in time for 2023 WMO Congress

- Procurar probar que el OpenCDMS es una solucion viable a tiempo para el Congreso de la OMM de 2023.

Annex 4 summarises the next steps agreed in order to start implementation of option 2.

Eventually, Mr HECHLER presented work of previous WMO contractor Mr Steve FOREMAN on the strategy for the development of an open source reference CDMS tool set. It has to be noted that some specific elements of the document package are outdated due to recent developments. Key elements, however, do apply to the newly established Climsoft –

MCH collaboration. The full document package is available here (link will be removed soon due to WMO website re-design):

http://www.wmo.int/pages/prog/wcp/wcdmp/CDM_3.php

It has been emphasised in the discussion that maintaining future OpenCDMS as a tool to underpin WMO programmes in particular will require dedicated resources and funds for coordination to control its further evolution under a full open source approach (otherwise there is a risk that OpenCDMS may develop in a different direction that does not focus on NMHSs and WMO programme compliance).

The point was raised that there is a conceptual separation between the management of observation data and the climate services tools which read the observation data (and metadata). Participants agreed to reconsider the issue later in the development of OpenCDMS.

Mr PALMER offered to use SharePoint as a tool for sharing documents among Climsoft and MCH teams. Participants agreed to reconsider the issue later in the development of OpenCDMS.

5. Any other business

None.

6. Conclusions and recommendations

Main meeting conclusions and recommendations are reflected in the above statement of collaboration and agreed next activities as per Annex 4.

7. Closing

Participants expressed their deep satisfaction with the outcomes of the meeting and stressed their excitement, interest and will to start collaborating on OpenCDMS.

The meeting was closed at 1 p.m. on Friday, 17 May 2019.

ANNEX 1

Work plan

	Monday	Tuesday	Wednesday	Thursday	Friday
a.m. (from 9 a.m.)	Opening including remote statement from D/CLW, agenda, meeting organisation, introductory talk: WMO CDMS strategy (Peer) CLIMSOFT: demo, functionalities (including assessment vs. WMO specifications as per WMO-N°1131) and future development plans	MCH demo, functionalities (including assessment vs. WMO specifications as per WMO-N°1131) and future development plans	Brainstorming on collaboration prospects; identification of collaboration subjects; opportunities and challenges Collaboration subjects: Detailed technical discussion	Talk: OpenCDMS strategy and road map (Peer); Brainstorming on how CLIMSOFT – MCH collaboration can lead to OpenCDMS	Wrap up: Where to go from here
p.m. (to 6 p.m.)	*Morning session continued.*	*Morning session continued.* Discussion on CDMS – application tools interface including Climate Services Toolkit, R-INSTAT etc.	*Morning session continued.*	CLIMSOFT-MCH collaboration and OpenCDMS: Detailed technical discussion	Conclusions and recommendations; Closure (15:30)

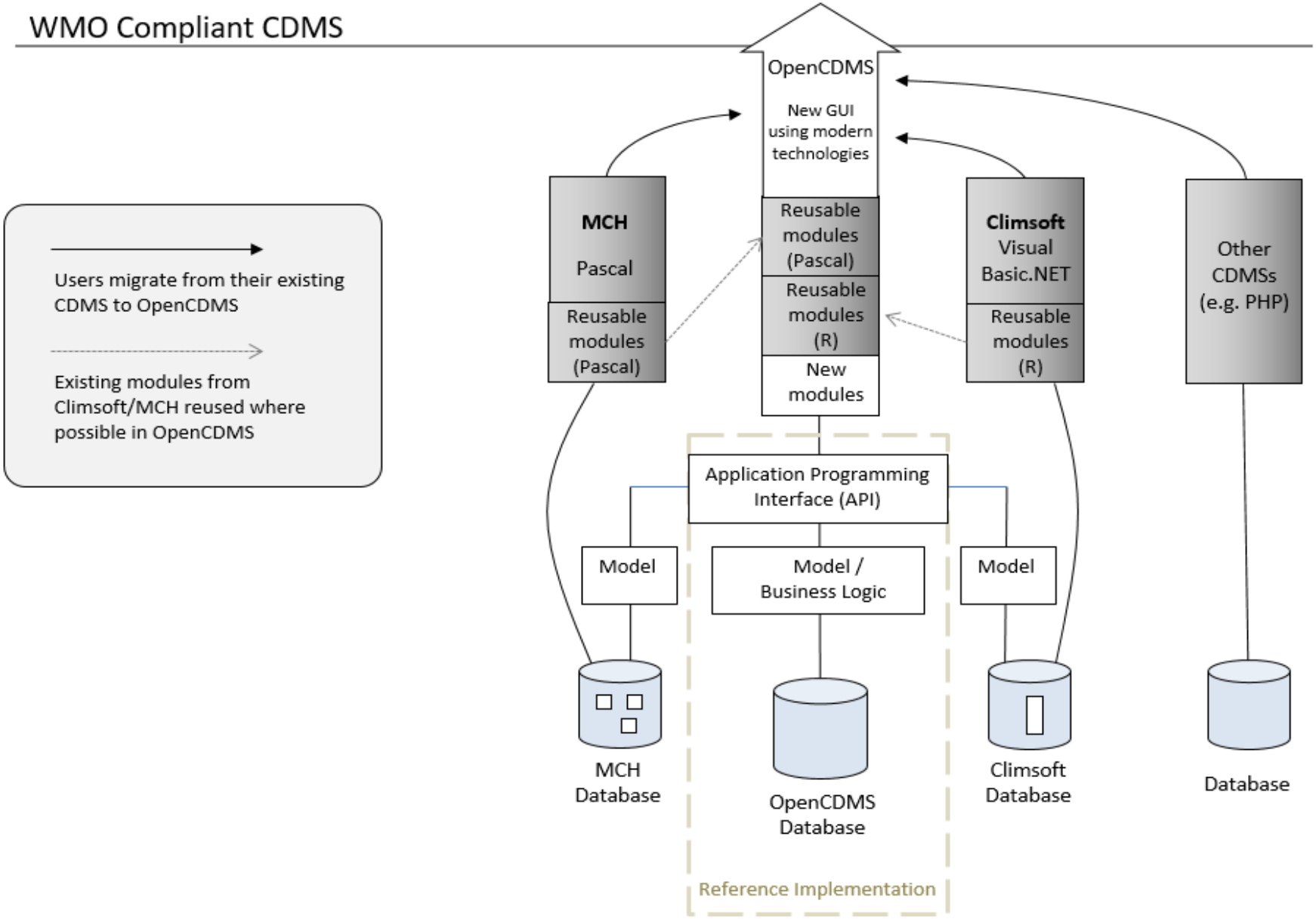
ANNEX 2

List of participants

1. Mrs Etna Cervantes, Mexico
2. Carlos Cervantes, Mexico
3. Eduardo Porras, Mexico
4. Marcellin Habimana, Rwanda
5. Samuel Machua, Kenya
6. Steve Palmer, UK
7. Mrs Karen McCourt, UK
8. Ian Edwards, UK
9. Roger Stern, UK
10. David Stern, UK
11. Nirina Ravalitera, WMO
12. Peer Hechler, WMO
13. Danny Parson, UK
14. Dave Mills, UK
15. Ms Lucia Falcinelli, Italy
16. Jose Guijarro, Spain

ANNEX 3

Illustration of OpenCDMS development approach



ANNEX 4

Climsoft – MCH collaboration: Key activities for the next ten months

Who	Task	Deadline
Karen, Steve	Explore opportunities for an intervention at World Meteorological Congress re OpenCDMS; draft a potential UK statement and share it with meeting participants to trigger supportive statements from their delegations during Congress	3Jun19
MCH	To explore funding opportunities from Mexico by promoting OpenCDMS	7Jun19
Climsoft	Workshop UK Met Office International Development team - explore funding opportunities by promoting OpenCDMS	Jul19
MCH	To document MCH database for the OpenCDMS team	19Jul19
Climsoft	To update and share Entity Relation Diagram, share Climsoft v4 Technical Requirements	19Jul19
Climsoft	To document Climsoft database for the OpenCDMS team	19Jul19
MCH	To build a first version of the data model from a script specification (tool: PostGIS)	16Aug19
MCH & Climsoft	To build an API to read and write stations, station groups and numeric observations database (programming language: Phyton)	13Sep19
R-INSTAT, Jose	Implementing HOMOGEN function of Climatol into R-INSTAT package	31Oct19
Jose	Present OpenCDMS at EUMETNET Data Management Workshop	Nov19
MCH & Climsoft	To fill the first database with sample data through API (using free pascal program).	13Dec19
R-INSTAT	Explore resource opportunities to launch climatic menu for R-INSTAT and –subject to funding- (i) investigate implementation of a module in R-INSTAT to read MCH data and write R-INSTAT products back in MCH data base; (ii) investigate with MCH designing a hydrological menu for R-INSTAT; (iii) document climatic (and hydrological) menu	31Dec19
Climsoft	To share Climsoft v5 data model	31Dec19
MCH, Nirina	Agree on MCH licence and contributor agreement within WMO; create an MCH project within the OpenCDMS organisation on GitHub (this does not require sharing any code, but can become a place for discussions relating to MCH and could be used for tracking issues and providing documentation if appropriate)	31Dec19
MCH	To decouple the first MCH functions from its actual database and use it by command line through API (e.g. SPI creation)	14Feb20
Climsoft	Try SPI using R-INSTAT and getting data through the API	14Feb20
MCH & Climsoft	For mandatory functions as per WMO CDMS specifications: To create a work plan (including resource requirements) for achieving compliance of related MCH and Climsoft functions	28Feb20
MCH & Climsoft	To build a first version of a manual for programmers on how to decouple MCH and Climsoft databases from code and change the dataflow through API	20Mar20
MCH & Climsoft	Explore existing CDMS data models and agree on the data model for OpenCDMS	30Mar20
Peer, Nirina, all	Regular video calls between teams starting from mid Sep19	From Sep19
Peer, Nirina, all	Next face-to-face meeting tentatively scheduled for 1st half of 2020 (subject to availability of resources)	1st half 2020