WMO SPICE DAT Teleconference

Date	**03.07.2013**	**Time**	12:00 – 14:00 (UTC)
Purpose	**SPICE / Data Analysis**		
IOC member attendees (strike through if not attending)	**Bruce Baker, ~~Jordy Hendrikx~~, Yves-Alain Roulet, Roy Rasmussen, John Kochendorfer, Paul Joe, ~~Mike Earle~~, ~~Daqing Yang, Craig Smith~~, ~~Rodica Nitu~~, Matteo Colli, Mareile Wolff, ~~Kai Wong~~, ~~Laurie Wilson~~, Audrey Reverdin,**		
Distribution	**All attendees; SPICE Project team**		
Moderator	**M. Wolff**	**Recorder**	**M. Wolff**

Meeting Records (**A** = Action / **D** = Decision / **I** = Information)

#	A / I / D	Item Description	Owner	Due Date [DD.MM.YYYY]
13.0	I	**Agenda** 1. Completion of recommendation for optical sensor inside DFIR 2. Davos Summary 3. Merging of open actions from Telecon and Davos 4. Workplan/Responsibilities until the end of the year 5. **Next Telephone Conference: Wednesday, 10.07.2013, 12UTC**		
		1. Completion of recommendation for optical sensor inside DFIR		
13.1	D	Matteo presented results/figure from Julie (CFD). It was noted that the calculations might not have calculated the updrafts inside the DFIR correctly, because of the non-existing ground (wind speed = 0m/s at ground level) inside the model. Because of the need to send out the recommendation to site managers immediately a decision was done based on the figures and experimental experience: The DAT agreed to recommend the following place for an optical precipitation detector or precipitation type sensor inside the DFIR: • Inside the inner fence • 75 cm below the gauge opening, corresponds to half way down the inner fence • perpendicular to the main wind direction • if possible using two precipitation sensors at different places to account for different wind directions. • Mount it in the middle between Alter and inner fence		

13.2	A	Give feedback to Julie: • No ground included in calculations but will likely influence the flow a lot (logarithmic wind profile induced by zero wind speed at the ground) – is that possible? • The main flow hits the DFIR exactly at one corner, which is not very likely – is it possible to turn the DFIR that the flow hits an edge of the DFIR? • Confirmation that an Alter shield is included in the calculations • Could you produce a plot showing the chosen placement of the sensor and its influence?	Mareile/Matteo	31.07.2013
		2. Davos Summary		
13.3	I	**Topics discussed (not complete list, read the meeting report! These were most relevant to DAT activities):** -encouraging preliminary results from sites (there is enough data out there, ☺) -QC: Noise Filter, Outlier and Jump Filter, NO Temperature correction -Event selection -Importance of precipitation detector for event selection – recommendation to have YN-sensor inside DFIR-fence -homogenization and classification -importance of precipitation type – recommendation to have disdrometer inside DFIR-fence -presentation of transfer from R2-R3 from Roy -uncertainty of gauges -Workplan -Commissioning process and tracking of future changes at the sites -heating algorithm, functional spec: rim temperature between +2 and +3 deg C. **Presentations from** Boris Sevruk on measured precipitation, snow fall and water equivalent of snow Vladislav Nespor on wind induced errors on two types of precipitation gauges Matteo Colli on a simulation experiment aimed at assessing the wind induced under catch and wind pumping effect in a single alter shield and in the DFIR fence **Not or only shortly discussed** -R0-R1 transfer -R1-R2 transfer -Time tagging of averages (at the end or centre?) -tracking of changes at the test-sites, data/maintenance logs -how to decide and what to do if one or several wire fails?		
		3. Merging of open actions from Telecons and Davos		
13.4	I	Mareile has implemented the "Davos-actions" inside the open action list from earlier teleconferences, marked with DVS.x as a number. The implantation was done thematic.		
13.5	A	Check actions and report back if they can be closed or are not necessary anymore	All & Task owners	10.07.2013
13.6	A	Give feedback if there are any Davos-actions missing	Davos-participants	10.07.2013

		4. **Workplan and responsibilities until the end of the year**		

13.7	I	The following five major work packages are suggested and will be sent to give possibility for feedback
		
		    • <mark style="background:green">Quality Control</mark>
		    • <mark style="background:lime">Production of Level 3 data (analysis ready data set)</mark>
		    • <mark style="background:yellow">Analysis (Homogenization, Classification, Adjustment functions)</mark>
		    • <mark style="background:cyan">Uncertainty of Reference</mark>
		    • <mark style="background:magenta">Relations between references</mark>
		
		The color-code is used in the following list of tasks to show the associated work-package		

13.8	A	Decide on work-packages, assigning work-package managers and teams. "Who wants and can contribute to what and how"? Work package managers are supposed to be the person keeping "the overview", tracking the result and trying to reach a usable result at the end – there are not necessarily being the person doing most of the actual work.	DAT	10.07.2013

13.9	A	Decide on how to proceed with the work:
		    o frequence of telecons
		    o using topic telecons (so not everybody has to participate everytime)
		    o workplan/timeline
		    o …
			DAT	10.07.2013

Open Actions

#	A / I / D	Item Description	Owner	Due Date
11.4	D/A	We should ask manufacturers for a confirmation that installation and operation of their instruments is OK suggest to Rodica In commissioning protocol there is some information on this. We could send on request e.g. some sample data to manufacturers so they can check if instruments are working OK. Reference data should not be necessary for this. Proposal: encourage site managers to contact manufacturers and remind them of the opportunity to receive their data and do this check.	Bruce Rodica	07.06.2013 done ??
DVS.x	A?	Encourage the site managers to contact manufacturers for confirmation of proper instrument behavior to be sent out with letter to site managers	Rodica	xx
11.3	A	Send proposal for definition of snowfall events for discussion and commenting in DAT.	Mareile	07.06.2013 done
DVS.x	D	The DAT recommended an event selection method which is described in annex IV of the Davos meeting report. The following conditions has to be positive: • YN-detector positive and positive accumulation within 10 min inside gauge • Accumulation higher than 0.25mm/30min • Net precipitation duration longer than 60% The result is an event-file for each site which contains all 30-min periods with precipitation and characterizing parameters		
DVS.x	A	Coding and optimizing the event selection algorithm (preferably with several sites);	??	xx
DVS.x	A	Completing the list of "characterizing" parameters for events	??	xx
DVS.x	A	Implementing the "final" code at NCAR for prosessing data of all sites to secure the production of comparable event files	Roy	
11.6	A	Prepare a proposal for optimum noise filter for GEONOR and Pluvio² for the meeting in Davos.	Mike	07.06.2013 done
DVS.x	D/I	The DAT agreed on using both filter methods on the SPICE data in order to further evaluate the difference when used on real data. The filter widths are set to 2 min and 8 min to be used on the 6 s data sets and the 1 min data sets, respectively. The DAT acknowledges that the chosen filter width is not optimal for the Pluvio2 gauges (because of lower noise frequencies) in favor of equal time response of both gauges.		
DVS.x	A	Pseudo-code for filter methods to be sent around	Mike & Matteo	xx

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#	I/A/D	Item Description	Owner	Due Date
DVS.x	A	Realizing both filter methods at NCAR	Roy	xx
11.7	I A	Mike showed plots of pluvio² temperature dependence from Sodankylä and Weißfluhjoch. The temperature coefficient changes daily, so it seems that there is some other influence factor affecting the weight data. For the Davos meeting a proposal has to be prepared if and how a temperature correction should/could be applied to GEONOR and Pluvio² data.	Mike	07.06.2013 done
10.6	A	What is the maximum / typical temperature change at the onset and during precipitation events at the Marshal site?	John	31.05.2013 Still necessary?
DVS.x	D	No temperature correction is applied to the data because it has shown to be very extensive while not being reliable in all cases. For the retrieval of the transfer functions, precipitation events with high temperature variations will be filtered out in order to minimize the temperature effect on gauges		
10.4	A	In GEONOR data, some small steps were seen (in precip free times), resembling a 'saw-tooth' pattern. It should be analyzed whether these steps are caused by a single wire only. In that case there would be a possibility to remove them. Roy noted that the configuration of the GEONOR in the DFIR at Marshall had been updated since the cases in question, which may have remedied the issue. Similar steps were observed for the GEONOR in the single-Alter, which were more difficult to explain. Roy and Bruce also emphasized that the magnitude of these errors is likely small relative to that observed during precip events.	Matteo / Mike	31.05.13 ??
7.14	A	Request input (Julie, Mateo, Scott) for measurements necessary to validate the CFD model. *March 03: Roy has asked Julie, Matteo and Scott; waiting for answer.*	Roy	16.04.2013 ??
7.9	A	**What is causing the fluctuations?** The observed fluctuations of the Geonor weight curves should be correlated with temperature, wind and radiation.	Mike et al.	09.04.2013 ??
7.10	A	**If e.g. the weight on one wire goes up and on the remaining two it goes down…** …is this effect arising from a temperature change? If yes: do the transducers have an individual temperature dependence? Look at calibration of wires as a function of temperature. Or is the whole setup tilting (shifting the center of gravity in the bucket) and the force measurement of the wires is real?	Mike et al.	16.04.2013 ??
DVS.x	A	How to decide that one wire is bad and what to do with it? How will e.g. an average of two wires influence the uncertainty of the reference-gauge	??	xx

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#	A/I/D	Item Description	Owner	Due Date
7.7	A	Gaussian filter: Test if short gaps could be filled up by a straight line.	Mike et al.	26.03.2013 Still necessary or done?
7.4	A	Plot noise (noisy curve – filtered curve) over wind speed to display the noise reduction for various filter methods (or settings).	Mike et al.	26.03.2013 Still necessary or done?
5.3	A	Roy to prepare video on using NCAR SPICE website for	Roy	April 2013
6.5	A	*Data quality control procedures* Jordy has agreed to take up the task of documenting the data quality control procedures and is developing a template for QC procedures. His idea is to **send the QC template to the DAT team** and populate it as best as we can. We can then compare all the different approaches / and areas where people are using automatic QC.	Jordy	26.03.2013 ??
4.7	A	**Summary of basic QC** Provide an additional summary of basic QC statistics for each site: bar chart or table… to assist local site managers. It should contain e.g. the number of invalid characters in all files for each site or the number of missing columns, miss- ing data etc…	Andy	28.04.2013 ??
DVS.x	D	The DAT decides to use the following QC-methods before noise filtering: • Outlier filter (gradient filter) • Jump filter – only flag data for later manual inspection		
DVS.x	A	Define filter thresholds: • 6 s and 1 min outlier threshold • 6s and 1 min jump definition	??	xx
5.11	D	Roy will propose methodologies linking R3 refs with R2, R1 refs (first review: March 26) Could be tested by other site teams (e.g. CARE)	Roy, Bruce	April 02, 2013 done
DVS.x	I	Roy presented method for linking R3-R2 with R1		
DVS.x	A	Test and re-assess transfer method for different site data		
DVS.x	A	Complete transfer method (last step)		
DVS.x	A	Discussion of method, literature search, uncertainties,..	DAT	xx
5.14	A	Each lead to document methodologies developed for Davos meeting (first review: May 14): will be submitted as meeting documents *11.03.13: Daqing offered to prepare a draft document on the link between R0 and R1 (based on Valdai data).*	Bruce/Roy, Mike, Matteo, Craig, Ma- reile, Daqing	May 14 done
DVS.x	I	Daqings paper about R0-R1 transfer available at meeting website		
DVS.x	A	Discussion of R0-R1 transfer functions, considering available data from Haukeliseter and Marshall, evt. using CFDs	DAT	xx
DVS.x	A	Including future data from Caribou Creek	Daqing	xx

#	I/A/D	Item Description	Owner	Due Date
5.4	A	Emanuele to report on the field calibration equipment and procedures proposed by Italy for use for gauges at Marshall.	Emanuele /Roy	05.03.2013 ??
DVS.x	I	Emanuele presented the field calibrator in Davos The IOC recognized the suitability of the calibrator and invited the Lead Centre to consider further developing and testing and to assess the timeframe by which such instruments could be made available to Site Managers		
5.5	A	Bruce to send out results from calibration testing – weights vs. liquid John noted that placement of weights is critical factor	Bruce	05.05.2013

#	A / I / D	Item Description	Owner	Due Date
5.6	D/A	Conduct comparison of calibration methods at Marshall site (CRN vs Calibrator proposed by Italy). Bruce will send flask to NCAR; also will explore sending weights to NCAR. John noted these can only be used for 600 mm Geonor.	Bruce/Roy	05.05.2013
DVS.x	I	The DAT discussed several methods to assess the uncertainty of reference gauges: • Field calibration with flasks • Dynamic field calibrator • Low wind events – for comparing different gauge configurations • Rain events – for comparing different gauge configurations at higher wind speeds • Comparing similar gauge/shield configurations		
DVS.x	A	Evaluate and discuss methods for assessing the uncertainty of reference gauges/configurations		xx
DVS.x	A	Describe the uncertainty of the gauges and/or gauge configurations		xx
4.6	D	**Commissioning of QC** Next step after site commissioning should be to check that all QC settings are filled out on the NCAR web site. Site managers should be able to manage their data transfer and data QC by help of this web-site. There should be a manual / tutorial for them (help button).	All	
DVS.x	A	Tracking of changes at each site	Jordy	31.08.2013
DVS.x	A	Developing transfer function R1-R2, use data from Care	?	xx
DVS.x	A	Explore methodologies to determine precipitation type	John	
DVS.x	A	Homogenization of events: Sensitivity analysises of the influencing parameters resulting in a comprehensive list		
DVS.x	A	Classification of events: Sensitivity analysises of the influencing parameters resulting in a comprehensive list		

Completed Actions

#	A / I / D	Item Description	Owner	Due Date
5.9	**A**	Develop a draft plan how the work for the meeting in Davos; include currently made commitments (see below) Will be reviewed with Team	Eckhard	26.03.13 done
6.8	**A**	We have to define which tasks have to be ready for the Davos meeting to which extent.	All	27.03.2013 done
10.5	**A**	Plot bucket weight vs temperature and derive temperature coefficients (linear slope) for Pluvio² and GEONOR gauges. Apply rough temperature adjustment to data to see which variations are remaining.	Mike	31.05.2013
2.1	**A**	Each of the sites to provide their "favourite" data set (containing some special events or days) → Comparison of different approaches of processing (by host and by DAT). Feb 26 update: data provided by Norway; all others outstanding March 5 update: data of CARE and Bratt's lake available, all others outstanding. Reminder has been sent by e-mail. March 19 update: Marshall data is also available. Finland will send data soon and Switzerland asap. May 17update: Sodankylä and Weißfluhjoch have sent their example data.	Eckhard	March 04
5.17	**A**	Team recognized need for quantifying alternative methodologies for assessing and comparing different filtering, aggregation methods/approaches. Input on options to be provided to Mike for summary and discussions.	Mike (others welcome to contribute!)	~~05.03.2013~~ 26.04.2013
6.10	**A**	Matteo should make an outline of his work. *No longer necessary, as Matteo's work is done independently of SPICE.*	Matteo	31.3.2013
7.5	**A**	Plot the noise distribution. Is it Gaussian? Outliers observed?	Mike et al.	~~26.03.2013~~ 26.04.2013
7.12	**A**	Comparison of Gaussian vs. moving average to see what is more effective. → "effectiveness" in terms of noise reduction and detail retention (e.g. real steps (caused by precipitation) should not be smoothed).	Mike	~~26.03.2013~~ 26.04.2013
4.5	**A/D**	**QC settings** It was agreed on that a certain instrument type should have the same QC settings on all sites. DAT should provide a list of these recommended settings. Share document on standard QC setting for different instruments in DAT for approval. March 26: Mike has resent list to DAT for completion.	Mike	04.03.2013
~~4.4~~	**A**	~~**Data set download**~~ ~~Provide functionality for a download of a complete day's data set.~~ *Task deleted: It is already possible to download a whole day's data of selected instruments.*	~~Andy~~	~~28.03.2013~~
5.10	**D**	Mike/Matteo to work on noise filtering, independently using provided data sets Will report on results on March 19, 2013 telecon	Mike/Matteo	19.03.2013 <mark>done</mark>

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#	A/I/D	Item Description	Owner	Due Date
5.13	D	Bruce will propose methodologies on the derivation and use of ratios for R3 references (first review: April 02.) Will be tested using R3 data from various sites. Could be tested by other site teams (e.g. CARE)	Bruce	April 02, 2013 <mark>done</mark>
5.12	A	Mike to provide to Roy proposals for filtering limits, to be implemented in the NCAR QC procedures, based on the work done in Canada	Mike	March 19 <mark>done</mark>
6.3	A	Lab test should be added on the agenda for the Davos meeting.	Rodica	19.03.2013 <mark>done</mark>
5.7	A	**Contribution of DAT members** Compile list of contributions committed by DAT members. Evaluate the eventual need for assistance.	Eckhard	26.02.2013 <mark>done</mark>
5.8	D	**Confirmation of contributions (confirmed or tentative) DAT Project Plan (v0.1)** Mike/Matteo to co-lead derivation of reference dataset (team: Paul, JohnK, Craig, Yves Alain) Roy/Bruce to co-lead development of inter-site assessment of results (team: JohnK, Mike, Jordy) Craig and Daqing to co-lead development of methodology for reference obs of snow on the ground (Craig busy until the end of May). Eckhard to confirm with Jordy about leading the compilation of input to data QC procedures; (team: John K, Mike) Mareile to lead site-specific methodology/results component (Team: Paul, Yves-Alain, site representatives)		26.02.2013 <mark>done</mark>
5.15	A	Append/complement request sent to Site managers for site data to include data for both gauges in R3 configuration. To enable development and testing of methodology.	Eckhard	01.03.2013 <mark>done</mark>
5.2	D/A	**Future teleconferences to be held on Tuesdays at 14 UTC** **Eckhard to inform WMO**	Eckhard	done
1.9	A	Discuss possibility for contracting data analysis expert	SPICE team	~~30.09.2012~~ ~~31.01.2013~~ <mark>done</mark>
	A	**Automatic QC procedures** NCAR should provide a list of already implemented QC checks, including ranges etc…	Roy	~~12.03.13~~ <mark>done</mark>
	A/D	**Time tagging** Make proposal on time tagging of averages Decision: time tagging: end of interval	Mike	~~12.02.13~~ <mark>done</mark>