

International Surface Temperature Initiative progress report March 2013

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On behalf of the steering committee

3/22/13

This constitutes the second in an envisaged annual set of progress reports by the International Surface Temperature Initiative. The primary purpose of these reports is to update the endorsing bodies of the initiative (WMO, TIES, BIPM) regarding progress against stated goals. Feedback from endorsing bodies is welcomed. This report will also be made available on the Initiative blog, and feedback there is also welcome from other interested parties and stakeholders.

The databank and benchmarking and assessment working group reports can be found at http://www.surface temperatures.org/progress_reports . The Implementation Plan can be found at http://www.surface temperatures.org/steering-committee/Surface_Temperature_Initiative_Implementation_Plan_version1_release.pdf?attredirects=0 .

SUMMARY

Overall progress

From a standing start in September 2010 the Initiative has now become mature. A steering committee, two working groups and several task teams undertake the work of the Initiative. The Initiative website and blogs have grown significantly and continue to be updated on a regular basis. The blog now gets over 100 hits a day fairly regularly. The Initiative is recognised by WMO, TIES, and BIPM. This recognition is key in ensuring legitimacy and engagement, and in providing feedback from relevant scientific stakeholder communities.

Several papers, web-based reports, and conference / workshop talks and posters have been given over the past year, including at major climate, metrology and statistics conferences. In early 2012 a keynote plenary talk was given at a major decadal metrological thermometry conference along with a session of talks. This resulted in 5 papers in the conference proceedings that are due to be published in spring 2013. These activities have helped to raise awareness of the Initiative and its aims among relevant communities. A paper outlining the overall Initiative aims was published in *Environmetrics* (statistics) led by Richard Chandler.

Thanks to significant ongoing efforts by the databank working group additional data sources have been acquired for inclusion in an initial databank version release. The databank working group continues to be engaged in the development of the first version release being undertaken under the leadership of NOAA's National Climatic Data Center. The initial monthly databank version release is likely to consist of records from in excess of 30,000 stations globally with many consisting of maximum and minimum temperatures in addition to monthly averages. Many of the additional sources help to greatly improve coverage in the period prior to the 1950s. The inclusion of monthly averages derived from existing daily data holdings will significantly enhance post-1950 coverage above and beyond existing monthly databases. During 2012 the merging algorithm was developed and refined. A first beta release was made in October 2012. This beta release was announced via the blog and the CLIMLIST listserv. A subsequent second beta release was made in December 2012 which benefitted from some user engagement. Currently a full first version release is envisaged upon acceptance of the methods paper which is planned to be submitted by mid-April. A short article outlining the databank was published in *EOS* in early 2013 led by Jay Lawrimore.

The benchmarking and assessment working group have undertaken significant progress towards designing a methodological framework for their activities. By necessity the majority of their work is pending the release of the first version of the databank holdings which the benchmark analogs will 'mirror'. The main work to date has been on the creation of plausible correlation structures both within and between synthetic station series. This is clearly important as breakpoint detection is a signal to noise problem and if the 'noise' of natural variability is wrong in the analogs their value will be significantly impeded.

Efforts have continued to coordinate with relevant other activities as known to the initiative participants. The UK Natural Environmental Research Council EarthTemp initiative (<http://www.earthtemp.net/>) had its first meeting in June 2012, at which a poster was presented. Kate Willett attended the ACRE meeting in France in 2012.

Significant issues

Significant issues remain largely unchanged from those outlined last year.

1. At time of writing, the envisaged working group charged with creating a data portal and user support is still not constituted. Although not currently critical as there are still no products developed under ISTI auspices this will become so and suggestions as to how to pursue this would be welcomed.
2. Concerns exist over the ability to get multiple independent groups engaged in the dataset creation (homogenization of the data to create climate products) problem. This is not something which we can directly control. Help in promoting the creation of new algorithms is required. We are working through personal contacts to reach out to potential participants.
3. Despite numerous efforts to create a crowdsourcing digitization portal with the citizen science alliance, no funding has been accrued. It would require of the order 0.5 million US\$ to create a portal and pull through to the databank for three years. Suggestions as to potential avenues to pursue would be welcome.
4. Implicit in much of the above the Initiative continues to function in a largely volunteer-based capacity with in-kind support from some of the participants' institutions. A more dedicated funding solution would help place the Initiative as a whole on a firmer basis. In particular progress should be weighed against dedicated resource. It is not, in that context, a great surprise that several timelines have slipped substantively.

The last Implementation Plan aimed to address these by tiger team style efforts thus:

“Efforts to address the significant issues raised above by dedicated members of the steering committee viz.:

- a. Data portal working group creation – Kate Willett, Michael de Podesta, Jayashree Revadekar*
- b. Getting groups engaged in product creation – Richard Chandler, Antonio Possolo, Xiaolan Wang*
- c. Crowdsourcing – Peter Thorne, Jay Lawrimore, Rob Allan, Albert Mhanda*
- d. Over-arching Initiative funding – Blair Trewin, Greg Strouse, Akiyo Yatagai”*

Of these activities only item b. really moved forwards in that we now have a list of potential groups who may be interested in participating in the homogenization of the databank holdings and benchmark exercise. Because the databank is not released yet little concrete effort at such outreach has been undertaken yet.

Plans for the coming year

1. Release first version of databank holdings upon acceptance of methods paper and associated code, documentation.
2. Release of first version of analogs and associated documentation in fall / winter.
3. Continued awareness raising through talks and posters at relevant events.

Publications in 2012-13

Jay Lawrimore, Jared Rennie and Peter Thorne, 2013, Responding to the Need for Better Global Temperature Data, EOS, 94 (6), 61–62 DOI: 10.1002/2013E0060002

Chandler, R. E., Thorne, P. W. et al. (2012) “Building trust in climate science: data products for the 21st century” *Environmetrics*, 23, 373-381

PROGRESS ON TASKS DETAILED IN THE IMPLEMENTATION PLAN THROUGH 2012

1. Ongoing or periodic activities

Task: Regular Teleconferences

Main Contact: Peter Thorne **Due Date:** Ongoing **Status:** Ongoing

Milestone: Regular discussions amongst members of the steering committee

Progress: Regular calls have occurred and been minuted on the web. In general agreed actions have been completed satisfactorily.

Issues: None

Task: Formal annual written report on Initiative

Main Contact: Peter Thorne **Due Date:** Jan **Status:** Done

Milestone: Written by steering committee to sponsors and posted online

Progress: This document

Issues: Delayed by a few days due to latent completion of WG progress reports.

Task: Formal written reports on working group progress

Main Contact: Jay Lawrimore / Kate Willett **Due Date:** Oct **Status:** Done (but delayed)

Milestone: Written reports from working groups submitted to steering committee for approval and posted online.

Progress: Done

Issues: Delayed due to commitments of WG chairs.

Task: Maintenance of website and blog

Main Contact: Peter Thorne **Due Date:** Ongoing **Status:** Ongoing

Milestone: Materials updated and highlighted on a regular basis

Progress: All relevant materials have been posted and are up to date, the website was refreshed in autumn 2012.

Issues: Public engagement with the blog has picked up but could be further improved. Website could also be made more intuitive and 'immediate'.

Task: Promotion of Initiative through relevant meetings

Main Contact: Steering committee **Due Date:** Ongoing **Status:** Ongoing

Milestone: Presentation to the science community through talks and posters.

Progress: The Initiative has been presented at multiple meetings this past year through talks and / or posters (note that this list includes specific tasks in this regard in the implementation plan):

- ITS9 plenary talk and session
- Earthtemp meeting poster
- Talk at ESA Globtemp meeting
- Poster at meeting on frontiers in detection and attribution in Banff
- Poster at meeting on Event attribution at Oxford University
- Presentations on databank to NCDC staff and CICS mid-term review
- Kate Willett's NCDC Visit with Claude Williams and Robert Lund - presentation
- Kate Willett's Clemson University/Robert Lund visit – presentation
- Lucie Vincent's CMOS presentation

- Kate Willett's presentation at the 5th ACRE Meeting, Toulouse, France
- Pacific Island countries climate workshop, Noumea, May 2012.

Issues: None

Task: Engendering new dataset efforts

Main Contact: Steering committee **Due Date:** Ongoing

Status: Cause for concern

Milestone: Exploit opportunities to promote awareness of the need for improvements to and diversity of algorithms, for example by organizing conference sessions and journal special issues and by lobbying funding bodies to support research in this area.

Progress: Limited to date.

Issues: Steering committee members have limited experience in this area and the funding environment is far from conducive.

Task: Up to date reference list of work on inhomogeneities in surface temperatures on website

Main Contact: Kate Willett **Due Date:** Ongoing **Status:** Ongoing

Milestone: To form a scientific basis for defining error model (analog) spread.

Progress: Outline report drafted and some references collected and held on website

Issues: None

Task: Advocacy of the benchmarks and support for users

Main Contact: Kate Willett **Due Date:** Ongoing **Status:** Ongoing

Milestone: All working group members should be encouraging use of the benchmarks and providing support where necessary

Progress: Limited as benchmarks have yet to be finalized. Kate Willett has attended the final COST HOME meeting to attempt to raise awareness.

Issues: None

Task: Advocacy of the databank, efforts to augment holdings

Main Contact: Jay Lawrimore **Due Date:** Ongoing **Status:** Ongoing

Milestone: Efforts to augment data holdings

Progress: A total of over 50 distinct data submissions have been collected to date to provide input to the databank. Many of these in turn combine multiple additional sources.

Issues: None.

2. Latent Activities due for completion in the previous reporting period

Task: Position paper on version control and provenance available for public comment

Main Contact: Jay Lawrimore **Due Date:** 9/11 **Status:** Pending

Milestone: Posted and available for discussion on the blog

Progress: None to date, because the databank is still under development it has been decided to fold this into the databank paper

Issues: Because it is dynamic presently it was decided to fold this into the main databank paper to avoid immediate dating.

Task: Paper in Environmetrics special issue

Main Contact: Richard Chandler **Due Date:** 10/11 **Status:** Done
Milestone: Written summary of the initiative, aimed at the international statistical community, in a special issue devoted to current problems in climate (invited contribution).
Progress: Paper published
Issues: None

Task: Metrologia article

Main Contact: Greg Strouse / Michael de Podesta **Due Date:** 12/11 **Status:** Pending

Milestone: Initiative briefing paper to the metrology community submitted
Progress: Early drafts have been exchanged between authors but the demands of the day job have precluded more meaningful progress.
Issues: Resource crunch.

3. Progress against stated aims in the Implementation Plan for the present year

Task: ITS-9 participation

Main Contact: Peter Thorne **Due Date:** 3/12 **Status:** Done

Milestone: Session at this major metrology conference on the International Surface Temperature Initiative (including at least four papers in the proceedings)

Progress: There were a total of six initiative related talks including a plenary talk by Peter Thorne. 5 papers are accepted at time of writing to our knowledge.

Issues: None. Proceedings should appear in March or April 2013.

Task: Release of version 1 of the temperature databank (monthly and daily)

Main Contact: Jay Lawrimore **Due Date:** 4/12 **Status:** Pending

Milestone: First version of stage 3 (merged) monthly and daily holdings made available through gosic.org or another designated website

Progress: Significant progress in instigating a merge process has been made with many iterations along the way. This release will include full process and data metadata including the code. A beta release was made in October 2012. With two subsequent beta releases in December 2012 and March 2013.

Issues: Work remains on completing a greylisting facility and gaining final host Institutional approvals for release

Task: Benchmarking position paper submitted for peer review

Main Contact: Kate Willett **Due Date:** 4/12 **Status:** Ongoing

Milestone: Submission to Journal of Atmospheric and Oceanic Technology, Journal of Geophysical Research-Atmospheres or Climate of the Past

Progress: 1st draft complete but awaiting finalisation of benchmark data creation methods and verification design

Issues: This is pending resolution of creation of clean analogs with plausible correlation structures which has proven harder than initially envisaged.

Task: Paper describing databank first version and underlying principles submitted to journal

Main Contact: Jay Lawrimore **Due Date:** 8/12 **Status:** Pending

Milestone: submission to journal

Progress: Brief report on the databank published in Feb 5, 2013 issue of EOS. Lengthy articles with full description of databank and merging procedures has been circulated twice to co-authors and revisions are being made as required by co-authors and their internal review procedures. Expect submission to GDJ in April.

Issues: Delayed, otherwise none.

Task: Creation and release of pilot benchmark analog-known-worlds and analog-error – worlds (monthly data)

Main Contact: Kate Willett **Due Date:** 11/12 **Status:** To be started
Milestone: Release to public of analogs alongside the databank holdings in identical format.

Progress: Pending completion of databank release
Issues: Dependency upon timing of databank initial release has led to a delay

Task: Creation and release of official cycle 1 benchmark analog-known-worlds and analog-error –worlds (monthly data)

Main Contact: Kate willett **Due Date:** 11/12 **Status:** To be started
Milestone: Release to public of analogs alongside the databank holdings in identical format.

Progress: Pending completion of databank release
Issues: Dependency upon timing of databank initial release has led to a delay

2. Proposed schedule of tasks for 2013-2014 reporting period

These are new proposed activities as the original Implementation Plan became very thin from 2013 on. Incompleted actions are now included with revised timelines and several new activities are proposed. Note that because one of the objectives is to create a new Implementation Plan activities not currently envisaged to occur during 2013 are deliberately not included here.

Activity	Details	Owner	Due date
Ongoing			
Regular teleconferences	For steering committee and any groups formed under auspices of the initiative. Minutes posted online.	Steering committee	Quarterly or more frequently.
Formal annual written report on Initiative	By steering committee to sponsors and posted online	Steering committee	Every January
Formal written reports on working group progress	From working groups to Steering Committee and posted online	Working groups	Every October
Maintenance of website and blog	Materials updated and highlighted on a regular basis.	Steering Committee	Ongoing
Promotion of initiative through relevant meetings	Talks or posters	Steering Committee	Ongoing
Engendering new	Exploit opportunities to	Steering	Ongoing

dataset efforts	promote awareness of the need for improvements to and diversity of algorithms, for example by organizing conference sessions and journal special issues and by lobbying funding bodies to support research in this area.	committee	
Up to date reference list of work on inhomogeneities in surface temperatures on the website (www.surface-temperatures.org/benchmarking-and-assessment-working-group)	Ongoing throughout but will have formed the basis for defining error model spread.	Benchmarking and Assessment working group led by Kate Willett	Ongoing
Advocacy of the benchmarks and support for users	All group members should be encouraging use of the benchmarks and providing support where necessary	Benchmarking and Assessment working group, Steering Committee	Ongoing
Advocacy of the databank, efforts to augment holdings	Every effort should be made to engender data submissions	Steering committee, Databank working group	Ongoing
Timebound			
Release of version 1 of the temperature databank (monthly and daily)	Available from the GOSIC website or other designated website	Databank Working Group	April 2013
Analog-known-worlds proof-of-concept	Create software to produce analog-known-worlds on a proof-of-concept scale and submit methods paper	Team Creation – lead by Robert Lund and Kate Willett	May 2013
Analog-known-worlds global scale production	Produce analog-known-worlds for as many ISTI databank stage 3 stations as possible	Team Creation – code probably run and data hosted by Kate Willett	May 2013
Analog-error-worlds concepts finalised	Decide upon number and type of error-models to create (including how to	Team Corruption – lead by	May 2013

	ensure that these are blind tests for each cycle)	Claude Williams	
Benchmarking concepts paper	Overview outlining the entire Benchmark concept from analog-known-worlds, added error-models and validation	Benchmarking and Assessment working group led by Kate Willett	June 2013
Paper describing databank first version and underlying principles submitted to literature		Databank working group and task teams	August 2013
Validation concepts finalised	Decide upon number and type of tests with which to perform validation	Team Validation – lead by Ian Jolliffe	August 2013
New Implementation Plan drafted and published		Steering committee	September 2013
Benchmarking group meet up	Attempt to get as many together as possible, possibly a networked code sprint with a USA and Europe (Australia?) hub	Benchmarking working group	September / October 2013
Analog-error-worlds proof-of-concept	Create software to produce analog-error-worlds on a proof-of-concept scale and submit methods paper (if desired?)	Team Corruption – lead by Claude Williams	October 2013
Validation proof of concept	Create software and score system/intercomparison tables to run the validation on a proof-of-concept scale and submit methods paper (if desired?)	Team Validation – lead by Ian Jolliffe	October 2013
Analog-error worlds global scale production	Produce analog-error worlds from the analog-known-worlds ready for distribution	Team Corruption – lead by Claude Williams	November 2013
Benchmark Cycle Release of analog-errorworlds	Release first official benchmarks – publicise widely	Benchmarking working group	November / December 2013
Validation global scale production	Produce software and framework ready for running on the global	Team Validation – lead by Ian	December 2013

	scale – automated or manual	Jolliffe	
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