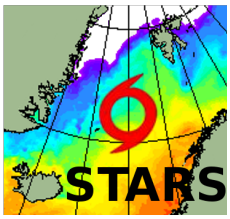

Deliverable D-22

Monthly Progress Report

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Author	:	Met.no
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Prepared by (met.no)	:	Yvonne Gusdal	
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AMENDMENT HISTORY

Version	Date	Change Description	Author
1.0	05/03/13	Report February 2013 to ESA	Yvonne Gusdal

DISTRIBUTION

Name	Role	Company
Craig Donlon	Scientific Officer	ESA

EXECUTIVE SUMMARY

In February we have mainly been working on the Final Deliverabels before the final meeting at ESTEC on March 11, 2013. A teleconference was arranged February 15, 2013 with ESA to get an overview of what has to be done before closing the project.

Further the quicklook database has been improved to show 4 pictures at the same time and the web page has been updated with a new polar low case from October 2012.

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INTRODUCTION

Purpose and Scope

This is the Progress Report for the STARS project and forms deliverable D-22 of the project documents. The purpose of the report is to provide a monthly update of the project activities and progress over each elapsed reporting period and a project plan of the activities for the following month.
This STARS progress report covers the elapsed period from 1 to 28 February 2013. The plan summarises task of STARS Phase II (described in the Project Management Plan (D-21)), management activities, status of deliverables, milestones and travel, risk analysis, problem areas and activities to be performed in the coming months.

Document Structure

The information within this document is structured as follows:

- Section 1: This introduction
- Section 2: Provides an overview of the project
- Section 3: Progress, problems and forthcoming activities for all major work packages
- Section 4: A summary of the management activities addressing contractual and financial aspects, status of deliverables, milestones and travel expenditure, actions and risks

Referenced Documents

ID	Title	Reference	Version	Date
SOW	Sea Surface Temperature and Altimeter Synergy	EOP-SM/1900/CD-cd	1.0 Rev 2	23/02/2009
D-21	STARS Project Management Plan Phase II		2.2	
D-1	STARS web portal			
D-23	STARS Action Database			
D-2	STARS Literature review		1.0	14/04/2009
D-3	STARS Scientific analysis Plan		6	
D-4	STARS-DAT v10			

PROJECT OVERVIEW

The main objective of the STARS project is to investigate possible ocean surface warming by strong winds from polar lows using an extensive satellite data set. In the STARS project a data set will be built and used to investigate each polar low event over a ten year period.

In the original plan for phase II of STARS, a coupled atmosphere-ocean model will be designed. The purpose of the coupled system is to simulate polar low events and to investigate how the ocean and atmosphere interacts. However, due to an installation of a new super computer facility in Norway in 2011, it is considerable uncertain that the required resources are available to the STARS project in 2011/2012. The shift in computer infrastructure also ties up expert resources on the proposed atmosphere model. It will therefore be difficult to allocate the expert competence assumed available in the proposed implementation plan. The original plan for phase II of STARS is therefore altered to not implement and use the coupled STARS-MODEL.

In the second phase, we will conduct an ocean hindcast simulation with a resolution of ~800 m. The objective is to investigate with observations and numerical modelling the adjustment processes that lead to ocean re-stratification after PL events. A process that influence the net heat loss to the atmosphere.

The oceanic response to hurricanes has long been recognised (Price, 1983; Sanford et al., 1987; Brink, 1989). Strong turbulent mixing entrainment of cold waters from deep layers leads to a cooling of the sea-surface. This rapid surface cooling reduces the surface fluxes and inhibits further hurricane intensification. When hurricanes moves over deep cores of warm waters, such as the Loop Current in the Gulf of Mexico, or warm core rings this surface cooling is strongly reduced. The warm water will then act to insulate the entrainment of cold waters form even deeper layers (Hong et al., 2000; Shay et al., 2000). In such cases, strong hurricane intensification has been observed. In 2005, Katrina intensified into a category 5 hurricane as it entered the warm Gulf of Mexico (Kafatos et al., 2006).

The ocean surface warming reported by Saetra et al. (2008) has only been observed by microwave satellite data. During could air outbreaks the ubiquitous cumulus convection prevents the sea-surface to be observed by infrared sensors (IR) such as AATSR, AVHRR and MODIS. However, verification of such ocean response to polar lows is urgent. Here, we propose to use altimeter combined with SST products from both microwave and infrared sensors to investigate possible surface warming in connection with polar lows. As the altimeter measures the surface anomaly (SLA) this can be related to the ocean heat content.

The main scientific questions to be addressed are:

- Can satellite IR observations in combination with altimeter be used to detect possible sea-surface warming caused by strong winds under polar low events?
- Can we identify a Polar Low Indicator based on satellite data that could be a useful tool for polar low forecasting?

- What are the dominant time and space scale of the ocean advection processes that govern the adjustments after PL event ?

In the second phase of STARS, an International Workshop on Polar Lows will be arranged in Oslo in 2012. The workshop aims at bringing together scientists and weather forecasters to present the results of the recent activity on polar low research, to share new knowledge and to encourage discussions on improved forecasting and understanding of polar lows

PROGRESS ON MAJOR TASKS PHASE II

Task 1: Management (Ongoing through the whole project)

Results of Reporting Period:

- Teleconference February 15, 2013 with ESA to get an overview of what has to be done before closing the project. The date of the Final meeting was set to March 11, 2013 at ESTEC.
- Work on the final reports.

Plans for Comming Reporting Period:

- Prepare Presentations for the Final meeting at ESTEC

Task 7: Maintain and improve STARS web portal

Results of Reporting Period

- The webpage has been updated with a new polar low event for October 24, 2012 (http://polarlow.met.no/polar_lows/PL_24102012/). Presentations from the workshop are also available on the webpage.
- The quicklook database has been improved to show more pictures at the same time. The public can now choose between a 2 tile or a 4 tile image-based data set.
- We would like to find out how many people have accessed STARS-DAT. However this is not an easy task, and will not been done.

Plans for Comming Reporting Period

- Prepare PPT slides to the Final meeting in ESTEC

Task 8: Extend STARS-DAT data set

Results of Reporting Period:

- STARS Task 8 report on STARS ASAR and ASCAT datasets and their information content has been worked on further. Disucussions on cases and on information content based on autocorrelation statistics has been completed. A final draft has now been submitted to ESA.

Plans for Comming Reporting Period

- Prepare a presentation for the Final meeting at ESTEC

Task 9: Impact assessment of Polar Lows

Results of Reporting Period

- Further analysis of both observations (of ocean response to PLs) and model simulations have been done in the process of rewriting report (P2D-6, Rep-5) into a peer-reviewed paper. The analysis of observations have been augmented with surface drifter data, and a manuscript focusing on observations (to be submitted to Geophysical Research Letters) is near completion. The model simulations need some more analysis, but we plan to also write this up and submit as a separate manuscript in the spring.

Plans for Comming Reporting Period

- Prepare a presentation for the Final meeting at ESTEC

Task 10: Polar Low Scientific Community Development

Results of Reporting Period

- Have finished the Workshop report ("International Workshop on Polar Lows in Oslo, May 2012").

Plans for Comming Reporting Period

- Prepare a presentation for the Final meeting at ESTEC

Progress team meetings

Name	Date	Purpose
PTM1	05/07/11	Progress team meeting 1 - SAR
IKO	21/09/11	Internal Kick-off meeting for STARS phase II
PTM2	03/02/12	Progress team meeting 2 - PLI
PTM3	16/02/12	Progress team meeting 3 – SAR + ASCAT

MANAGEMENT

Invoices

Milestone	Schedule date	Payment	Invoice to ESA	Payment Received
ADVANCE PAYMENT: upon signature of the Contract by both Parties	September 2009	24.000	yes	yes
PROGRESS PAYMENT: Upon successful completion of phase 1 and acceptance of all related deliverables by the Agency	June 2011	96.000	yes	yes
ADVANCE PAYMENT: Upon written authorization to proceed with phase 2	June 2011	16.000	yes	yes
PROGRESS PAYMENT: Upon the acceptance by the agency of **P2D-1 STARS-web** **P2D-2 STARS-DAT-V3** **P2D-3 STARS-DAT-DB-V3** **P2D-4 STARS-DAT-UM-V3** **P2D-5 REP-4**	March 2012	20.000	yes	no
FINAL SETTLEMENT: Upon satisfactory completion of all obligations, including the ones relating to Appendix 5 on statement of inventions and inventory, and acceptance by ESA of all deliverables	11/01/12	144.000	yes	no
Totals		300.000		

Action Database

Action Ref	Action	Actioner	Target Date	Status	Date Closed
Progress meeting ESA (PM)					
PM-2	Include information/pictures of the first forecasted polar low this season on the web page	GN		Ongoing	
Progress meeting Tromsø (PM8)					
PM8-22	ØS and team - to contact university professors and ensure that students are	ØS			

	aware that STARS-DAT can be used for a project. And figure out what period of the data set should be given to the users!!				
PM8-28	Remember to mention in the finale report the use of EOLI software if we are missing anything, or positive feedbacks	BF	December	Later in March: Closed	
Teleconf. with ESA (Tele4)					
Tele4-1	Mail Craig names of who will attend the final meeting	ØS	February	Closed	
Tele4-2	Make the agenda for the final meeting	CD	March	Closed	
Tele4-3	Go through the monthly reports and make sure there is one report for each month for STARS phase II	YG	February	Closed	
Tele4-4	Access to STARS-DAT	YG	February	Closed	
Tele4-5	Send out a mail for feedbacks on STARS-DAT. Include this information in the Final Report	ØS	March		
Tele4-6	Change the quicklook database to show more pictures	SE	February	Closed	
Tele4-7	Make a link on the quicklook page showing where people can acces STARS-DAT	SE	February	Closed	
Tele4-8	Emphasize in the Final presentation that there were no data set for polar lows like STARS-DAT before this project	ØS			
Tele4-9	Mention in the final report the time we have used collecting the data, but the little time we have had to analyse it	BF	March		
Tele4-10	Mention in the final report the use of EOLI software and if we are missing anything				
Tele4-11	Find out if the report on ASAR and scatterometer can be published as a peer-	BF/HS			

	reviewed paper in the Journal of Ocean and Atmospheric Technology (JAOT).				
Tele4-12	Emphasise in the Final report how STARS have led to other projects	ØS			
Tele4-13	The report on ocean adjustment will be re-written as a peer-reviewed paper	PEI		Ongoing	
Tele4-14	Send Craig the deliverables on forecasting polar lows	ØS/GN	February	Closed	
Tele4-15	Send the workshop paper to Craig	ØS	February	Closed	

Status of Deliverables

The following contractual deliverables of Phase II have been submitted to ESA.

Doc Ref	Doc Title	Delivery Date	Status
P2D-1	STARS-web	01/10/11	Accepted
P2D-4	STARS-DAT-UM-v3	01/10/12	Accepted
P2D-2	STARS-DAT-v3	30/11/12	Accepted
P2D-3	STARS-DAT-DB-v3	07/03/13	Not Accepted
P2D-5	REP-4	08/10/12	Accepted
P2D-6	REP-5	28/11/12	Accepted
P2D-7	PLI	15/02/12	Not Accepted
P2D-8	Workshop	15/02/12	Not Accepted

Each document will be submitted to ESA for approval. Upon confirmation from ESA that the deliverables are satisfactory, the status shall be updated to accepted.

Status of Milestones

Milestone meetings are planned at vital points throughout the project lifetime. The status of these meetings to date is as follows.

Name	Date	Venue	Purpose	Status
MTR	07/06/11	ESA	Mid Term Review	Completed

Phase I				
KO Phase II	07/06/11	ESA	Kick-off meeting Phase II	Completed
PM	23/11/11	Met.no	Progress meeting	Completed
PM	22/03/12	Tromsø	Progress meeting	Completed
PM	01/10/12	Met.no	Progress meeting	Completed
FM	11/03/13	ESA	Final Meeting	Not Completed

Status of Travel Expenditure

Øyvind Sætra, Steinar Eastwood, Yvonne Gusdal, Pål Erik Isachsen, Gunnar Noer and Birgitte Furevik are attending the Final Meeting at ESTEC March 3, 2011.

Risk Analysis

The table below shows the most probable risks and issues identified to date.

ID	Type	Risk title and Description	Probability	Impact	Duration	Mitigation Strategy