Remote Sensing Applications Division (RSAD)

CDR Program Office

Weekly Report for Jun 1, 2012
Ed Kerns, Chief

CDR Program Office
FY12 Climate Data Records

Weekly Report – Jun 1, 2012

1. **Mean Layer Temperatures – Univ of Alabama Huntsville (UAH)**
   - Completed – Nov 17

2. **Sea Ice Concentration**
   - Completed – Mar 28

● 3. **Northern Hemisphere Snow Cover**
   - Received draft C-ATBD, reviewed and provided comments back to PI

● No change ↑ Increasing Risk ↓ Decreasing Risk *Candidate CDRs

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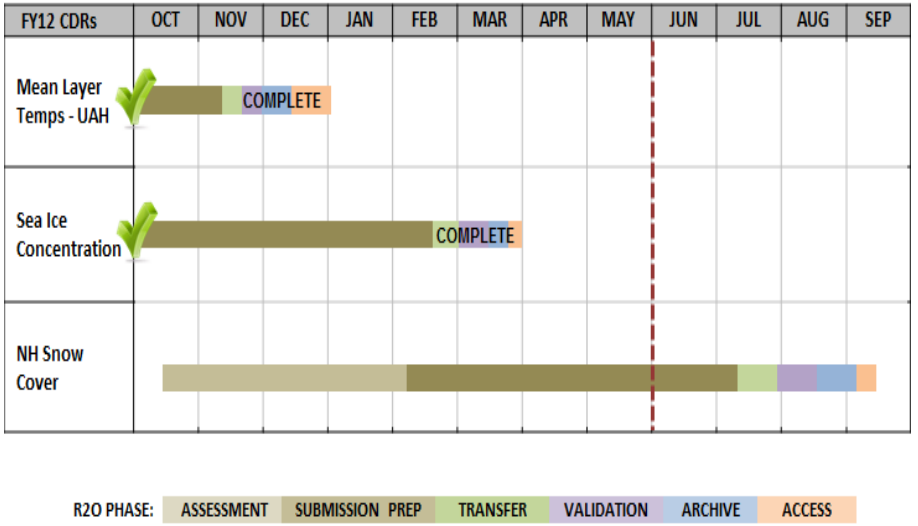
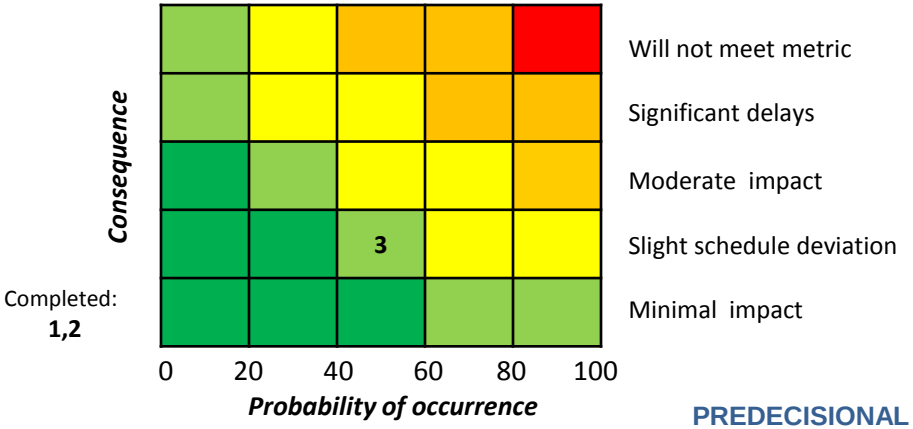
R2O Schedule



Risk Matrix



Completed: **1,2**

Risk - Mitigation

- **Snow Cover PI has a lot to accomplish by the end of the FY**
  - **Gave PI a detailed schedule and he is working to stay on track**
  - **Continue to transition the MLT-RSS CDR as a back-up**

- **No formal QA on product, software, and documentation**
  - **ORR helps alleviate some of the risks**
  - **Get reviews/input from in house experts as needed**
  - **Need to formally document the current QA steps being done**

PREDECISIONAL DRAFT INFORMATION

FY12 TCDR - NH Snow Cover

CDR Product: TCDR – NH Snow Cover, 1966-2012 (10 GB)
GEOSS Societal Benefit: Climate, Water, Ecosystems, Agriculture, Energy

Project Status

- **No Change**
- Received draft C-ATBD, lots of missing info
  - IPT reviewed and provided comments back to PI
- PI's programmer working on netCDF conversion
- PI sent updated Readme – still needs netCDF conversion piece
- SA draft available on google docs for review

SOW developed for:
1) Monthly updates for one year
2) QC tools and training

Next Action/Milestone

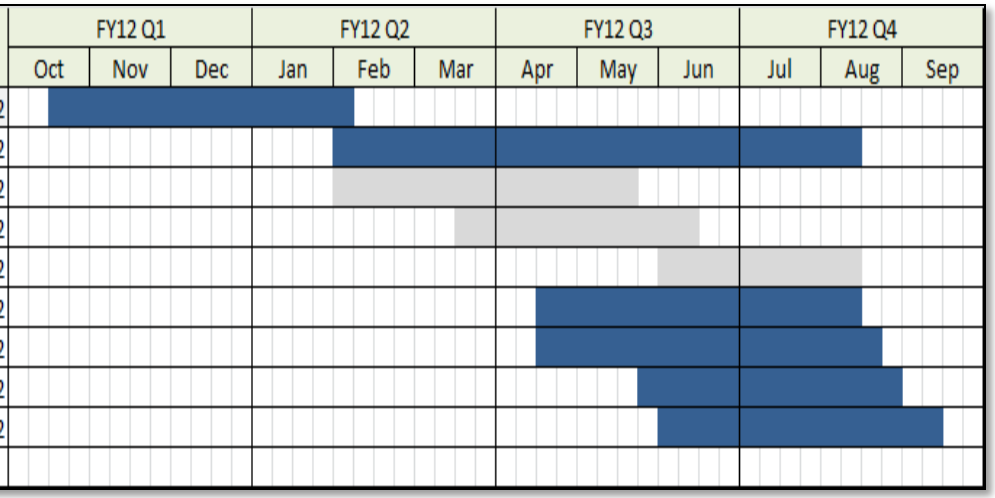
- Sample of source code (4/9) – done
- Draft flow diagram (4/27) – done
- Draft C-ATBD (5/21) – received but needs a lot of work

Project Risks

G

- Funding (SDS 2008)
  - SOW in development to get additional funds to PI
- Input data is made with a person in the loop (daily IMS data)
  - Metadata and documentation will detail how the product is created and identify its strengths/weaknesses

ID	Task Name	Status	Start	Stop
1	Initial Assessment	100	10/17/2011	2/9/2012
2	Transfer Prep	35	2/6/2012	8/7/2012
2a	Comment Source Code	25	2/6/2012	5/22/2012
2b	Create Docs (CATBD, Flow Chart, MM, Readme)	50	3/19/2012	6/11/2012
2c	Create NetCDF Dataset	25	5/30/2012	8/7/2012
3	Tranfer Code, Docs, and Data	10	4/18/2012	8/16/2012
4	Verify Code, Docs, and Data	10	4/19/2012	8/23/2012
5	Archive Code, Docs, and Data	0	5/31/2012	8/31/2012
6	Provide Access to Code, Docs, and Data	0	6/1/2012	9/10/2012



Backup FY12 CDR - Mean Layer Temperature - RSS

CDR Product: TCDR – Atmospheric Temperature at Four Layers, 1978-2011 (140 MB)
GEOSS Societal Benefit: Energy, Climate, Ecosystems

Project Status

- Provided feedback on sample netCDF conversion & metadata
  - next revision by PI in should be delivered Friday (6/1)
- Draft SA available on Google docs for PI and IPT to review
- About 25% of the code has been documented
  - PI will adjust copyright statement to maintain ©, but grant CDRP unrestricted license

SOW developed for:
1) Monthly updates for one year
2) QC tools and training

Next Action/Milestone

- Draft documented code (3/19) – done
- Draft Flow Diagram (4/9) – done
- Draft C-ATBD (4/30)
- Updated netCDF file sample (6/1)

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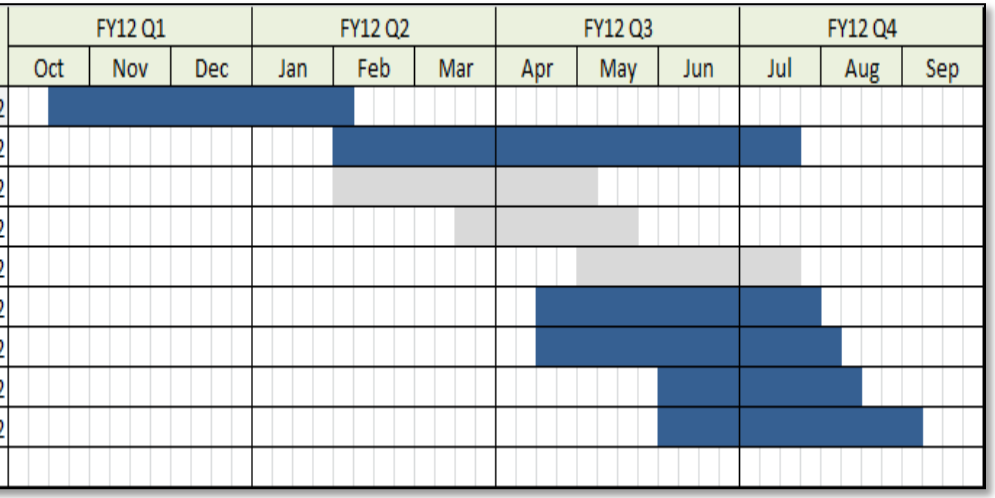
Project Risks

- Funding (SDS 2008)
  - SOW in development to get additional funds to PI

ID	Task Name	Status	Start	Stop
1	Initial Assessment	100	10/17/2011	2/3/2012
2	Transfer Prep	50	2/6/2012	7/24/2012
2a	Comment Source Code	25	2/6/2012	5/1/2012
2b	Create Docs (CATBD, Flow Chart, MM, Readme)	25	3/19/2012	5/22/2012
2c	Create NetCDF Dataset	75	5/3/2012	7/24/2012
3	Tranfer Code, Docs, and Data	15	4/18/2012	7/26/2012
4	Verify Code, Docs, and Data	15	4/19/2012	8/9/2012
5	Archive Code, Docs, and Data	0	5/31/2012	8/17/2012
6	Provide Access to Code, Docs, and Data	0	6/1/2012	9/3/2012



Backup FY12 CDR - Vegetation Bundle

CDR Product: TCDR – Vegetation Bundle, 1981-2012 (2.5 TB)
GEOSS Societal Benefit: Agriculture, Ecosystems, Climate, Biodiversity

Project Status

- **No Change**
- PI sent sample netCDF data
  - **IPT will review data and send feedback**
  - Set up google doc to collect feedback from IPT
- PI sent an updated flow diagram
  - much better than first one, still needs some tweaks

- Two CDRs in transition:
  - Deliver Surface Reflectance and NDVI in FY12
  - Postpone LAI and FPAR until more mature (FY13)

Next Action/Milestone

- Initial Assessment (3/22) – done
- Revised Flow Diagram (4/20) - done
- Samples of documented source code (4/27)
- Draft C-ATBD (6/1)

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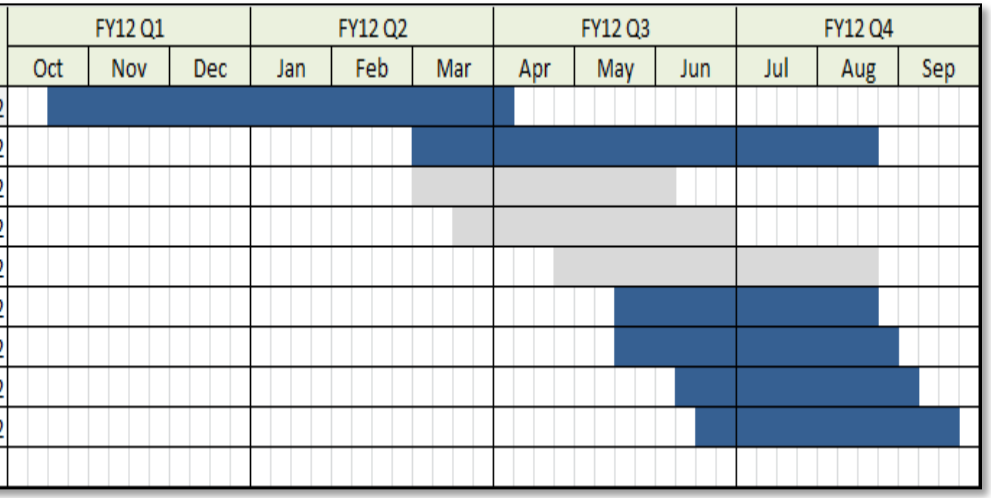
Project Risks

- Lots of work to be completed, lowest priority of the CDRs
  - sent PI a detailed task schedule, will push PI to stay on track
- SME out for a few weeks (baby)

ID	Task Name	Status	Start	Stop
1	Initial Assessment	100	10/17/2011	4/6/2012
2	Transfer Prep	10	3/1/2012	8/21/2012
2a	Comment Source Code	5	3/1/2012	6/1/2012
2b	Create Docs (CATBD, Flow Chart, MM, Readme)	15	3/15/2012	6/30/2012
2c	Create NetCDF Dataset	25	4/30/2012	8/21/2012
3	Tranfer Code, Docs, and Data	0	5/15/2012	8/21/2012
4	Verify Code, Docs, and Data	0	5/15/2012	8/30/2012
5	Archive Code, Docs, and Data	0	6/7/2012	9/7/2012
6	Provide Access to Code, Docs, and Data	0	6/15/2012	9/21/2012



FY12 TCDR - Sea Ice

CDR Product: TCDR - Sea ice concentration, 1979-2007 (20 GB)
GEOSS Societal Benefit: Climate, Water, Ecosystems, Agriculture

Project Status

- **Completed ORR for daily product**
  - **Generated good discussions on the process**
  - **Will tweak the ORR checklist to meet new requirements**
- **NSIDC will stage the monthly product on Friday for pickup**
  - **PI will deliver updated documentation on Friday also**
- Released daily sea ice CDR – March 28

SOW in work for:
1) Adding F17 data to daily and monthly
2) Extending POR from 2008 – current
3) Quarterly updates for one year
4) QC tools and training
5) Quarterly access reports

Next Action / Milestone

- Release daily CDR product (3/28) - done
- Create new monthly product (6/8)
- Archive new data and documentation updates (6/22)
- Add monthly product to web (6/29)

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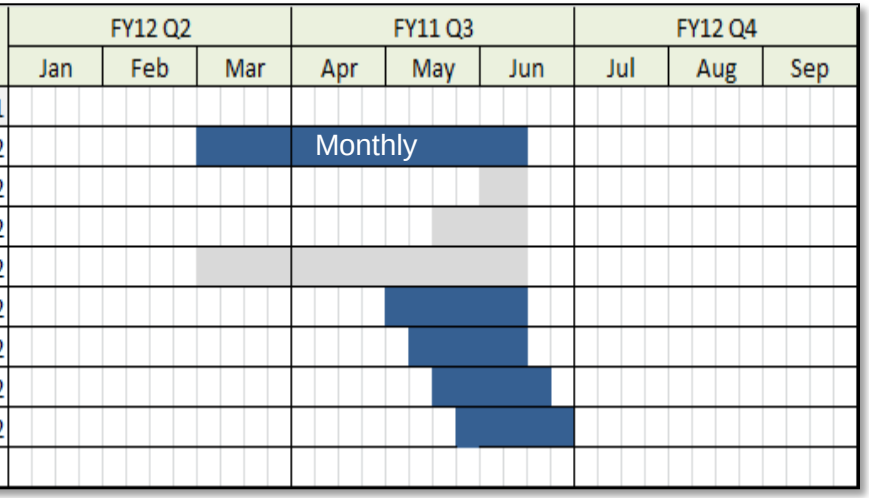
Project Risks

- No Funding to separate the CDR (modularize production code)

ID	Task Name	Status	Start	Stop
1	Initial Assessment	100	12/7/2010	1/7/2011
2	Transfer Prep	90	3/1/2012	6/15/2012
2a	Comment Source Code	90	6/1/2012	6/15/2012
2b	Create Docs (CATBD, Flow Chart, MM, Readme)	90	5/15/2012	6/15/2012
2c	Convert data from binary to NetCDF	90	3/1/2012	6/15/2012
3	Tranfer Code, Docs, and Data	50	5/1/2012	6/8/2012
4	Verify Code, Docs, and Data	50	5/8/2012	6/15/2012
5	Archive Code, Docs, and Data	0	5/15/2012	6/22/2012
6	Provide Access to Code, Docs, and Data	0	5/21/2012	6/29/2012



CDR – Precipitation PERSIANN

CDR Product: TCDR – Global Precipitation, 2000 -2012
GEOSS Societal Benefit: Water, Climate, Agriculture, Ecosystems

Project Status

- **Received copy of presentation slides**
  - Passed them along to interested parties
- **Received SOW from PI for data production**
  - No mention of documentation or source code in SOW
- Had good WebEx presentation from Soroosh
  - Stand up IPT (Sorooshian, Wunder, Nelson, AB?, OB?)

Next Action/Milestone

- Assessment
- Sample of source code
- Draft flow diagram
- Draft C-ATBD

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Project Risks

- Holes in input data (ISCCP) needed to create earlier CDR
  - In house expert for ISCCP

Project Schedule

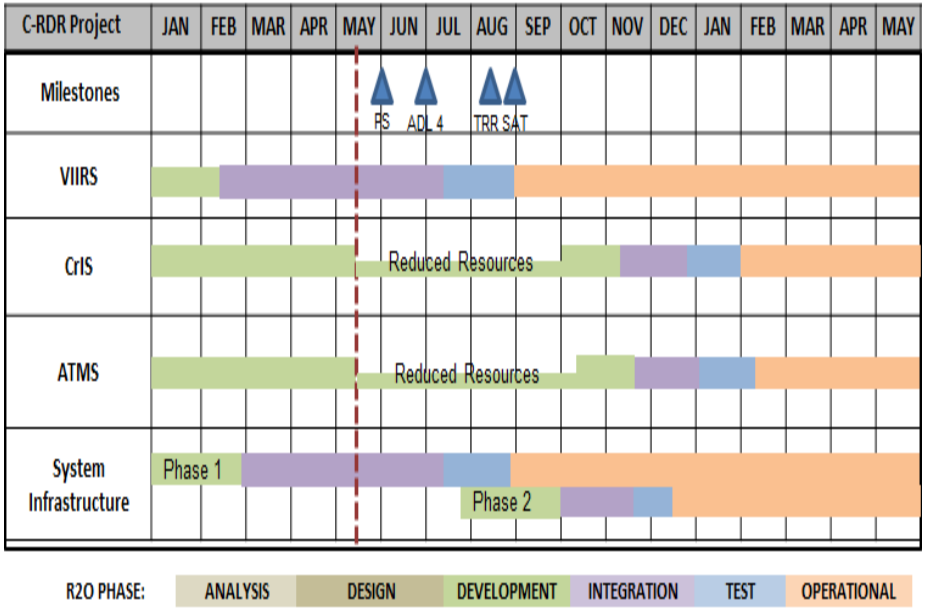
TBD

CDR Program Office
NPP/JPSS Climate Raw Data Records (C-RDRs) Project

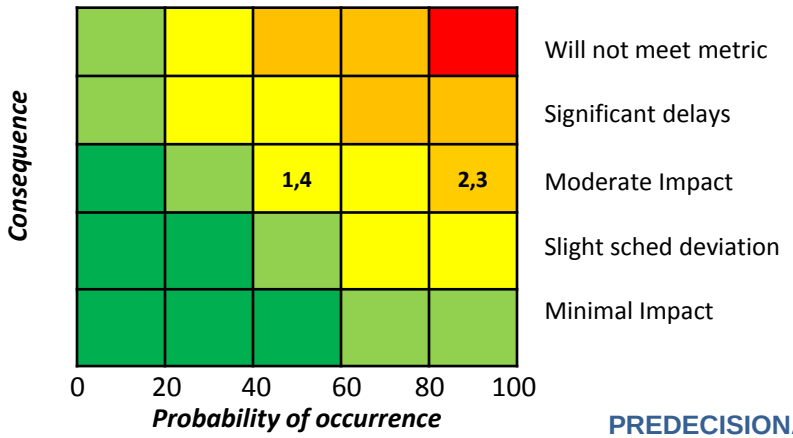
Weekly Report – May 31, 2012

1. **VIIRS**
   - Integrating the with the system infrastructure.
2. **CrIS**
   - Developing code to write the CrIS C-RDR.
3. **ATMS**
   - Developing code to write the ATMS C-RDR.
4. **System Infrastructure**
   - Integrating with the VIIRS C-RDR.

- **Successfully ran VIIRS data through the C-RDR system infrastructure and C-RDR packer**



Risk Matrix



Risk and Mitigation

VIIRS, CrIS, ATMS –

- Resources are being reduced. Delivery of CrIS and ATMS will be delayed.
- Operational software is under maintenance, updated versions may affect C-RDR ported version.

System Infrastructure –

Reliability of NPP RDRs from CLASS. Need to test ingest of RDRs from CLASS and develop an automated mechanism for re-requesting data.

- Ability of CLASS to handle the frequency and volume of NPP data. CLASS has been successful during system tests.
- Archive in CLASS is currently cost prohibitive. Need to identify alternate archive. Plan to store C-RDRs on HPSS until migration to CLASS.

Visible Infrared Imaging Radiometer Suite (VIIRS)

C-RDR Product: Raw sensor measurements with usage and provenance metadata in easily accessible netCDF4 format
GEOSS Societal Benefit: Climate, Water, Ecosystems, Agriculture, Biodiversity, Energy

Project Status

- **Successfully ran VIIRS data from CLASS through C-RDR packer.**
- **Identified errors with VIIRS processing and fixed.**
- Completed dynamic C-RDR file-level metadata code.
- Updated CrdrPacker software for Crdr file naming.
- Modified the supporting data metadata.
- Implemented and verified netCDF compression.
- Verifying (IDPS) documentation and code changes with DEWG.
- Wrote a test application to dump data from RDR APIDs.
- Completed writing science and spacecraft diary data.
- Completed test of code that writes VIIRS Support Data.
- Tracked down inconsistencies with PC files (docs vs code).

Next Action / Milestone

- Integrating the VIIRS C-RDR software and the system infrastructure.

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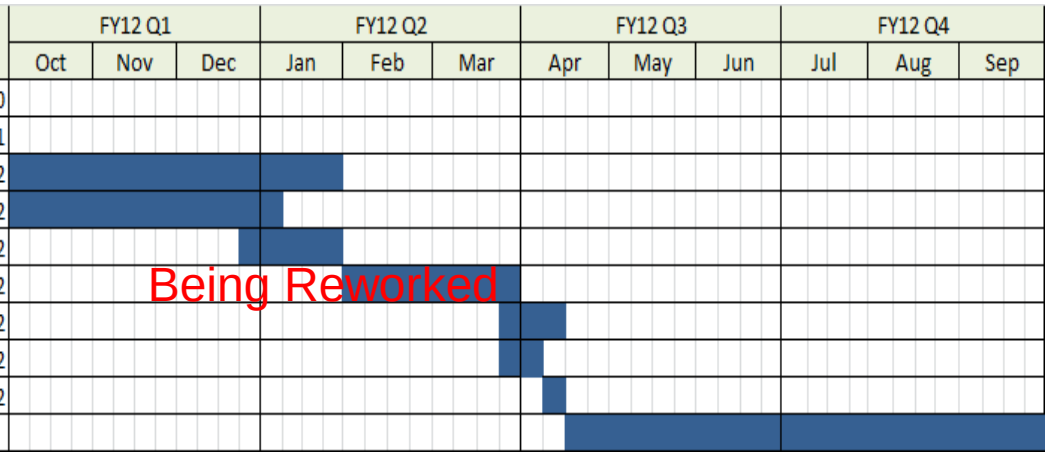
Project Risks

- Complexity of the NPP/JPSS RDRs and operational software
- Operational software is under maintenance, updated versions may affect C-RDR ported version

Project Schedule

ID	Task Name	Status	Start	Stop
1	Analysis	Completed	10/23/2009	5/4/2010
2	Design	Completed	5/6/2010	1/5/2011
3	Development	95.00%	1/6/2011	1/30/2012
3a	Develop VIIRS processing component	95.00%	1/6/2011	1/12/2012
3b	Test VIIRS processing component	95.00%	12/28/2011	1/30/2012
4	Integration	10.00%	1/31/2012	3/26/2012
5	Test		3/23/2012	4/12/2012
5a	Dry Runs		3/23/2012	4/11/2012
5b	System Acceptance Test		4/12/2012	4/12/2012
6	Operational		4/13/2012	



Cross-track Infrared Sounder (CrIS)

C-RDR Product: Raw sensor measurements with usage and provenance metadata in easily accessible netCDF4 format
GEOSS Societal Benefit: Climate, Water, Energy

Project Status

- **CrIS Developer is being redirected to new development. CrIS C-RDR will be delayed.**
- **Testing code for collecting and writing engineering data.**
- Completing draft of CrIS C-RDR Product Specification.
- Built and executing CrIS software in ADL 3.1.
- CrIS proprietary code issues have been resolved.
- Obtained the ADL version of the CrIS code.
- Developing code to create data structures for writing the C-RDR.
- Creating a MATLAB reader for the C-RDR to provide easy access.
- Evaluating processing of C-RDR with MATLAB and IDL
- Defining the netCDF4 structure for the C-RDR and developing software for writing the C-RDR.
- Ported operational algorithms (Space Dynamics Lab at Utah State)

Next Action / Milestone

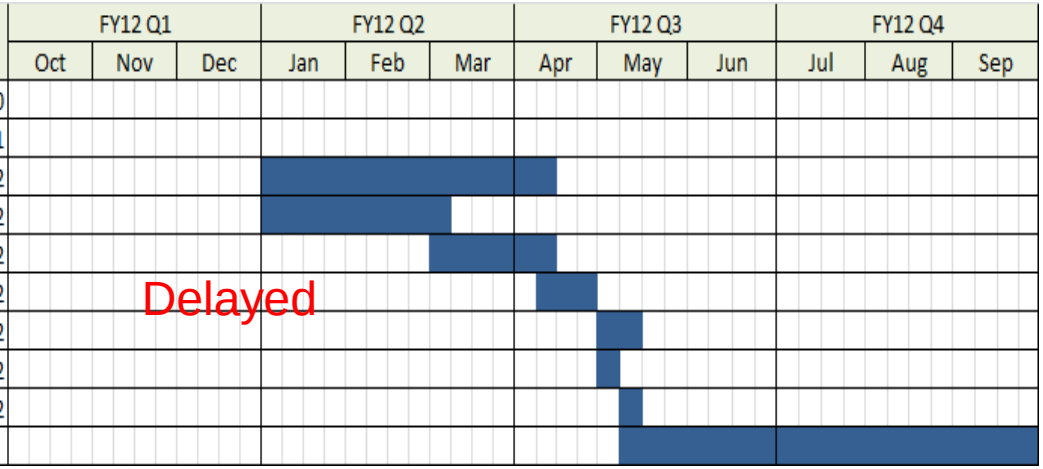
- Develop code to write CrIS C-RDR.

Project Risks

- **CrIS Developer is being redirected to new development. CrIS C-RDR will be delayed. Schedule will be updated when resources are available.**
- Complexity of the NPP/JPSS RDRs and operational software
- Operational software is under maintenance, updated versions may affect C-RDR ported version. Mitigated by using ADL.

Project Schedule

ID	Task Name	Status	Start	Stop
1	Analysis	Completed	8/16/2010	11/24/2010
2	Design	90.00%	11/26/2010	2/15/2011
3	Development (Phase 2)	30.00%	1/3/2012	4/7/2012
3a	Develop CrIS processing component	60.00%	1/3/2012	3/8/2012
3b	Test CrIS processing component		3/2/2012	4/7/2012
4	Integration		4/2/2012	4/27/2012
5	Test		4/30/2012	5/9/2012
5a	Dry Runs		4/30/2012	5/8/2012
5b	System Acceptance Test		5/9/2012	5/9/2012
6	Operational		5/10/2012	



Advanced Technology Microwave Sounder (ATMS)

C-RDR Product: Raw sensor measurements with usage and provenance metadata in easily accessible netCDF4 format
GEOSS Societal Benefit: Climate, Water, Energy

Project Status

- **ATMS Developer is being redirected to new development. ATMS C-RDR will be delayed.**
- **Developing code to write science data.**
- Working on ATMS C-RDR Product Specification.
- Testing the software framework for the Support Data Packer and Unpacker.
- Updating C-RDR data format.
- Defining the C-RDR format, contents, and metadata
- Identifying code and data structures required for C-RDR processing.
- Verified processing of ATMS algorithms
- IDPS ATMS algorithm executing in ADL at NCDC
- Obtained ported algorithms (SDL at Utah State)

Next Action / Milestone

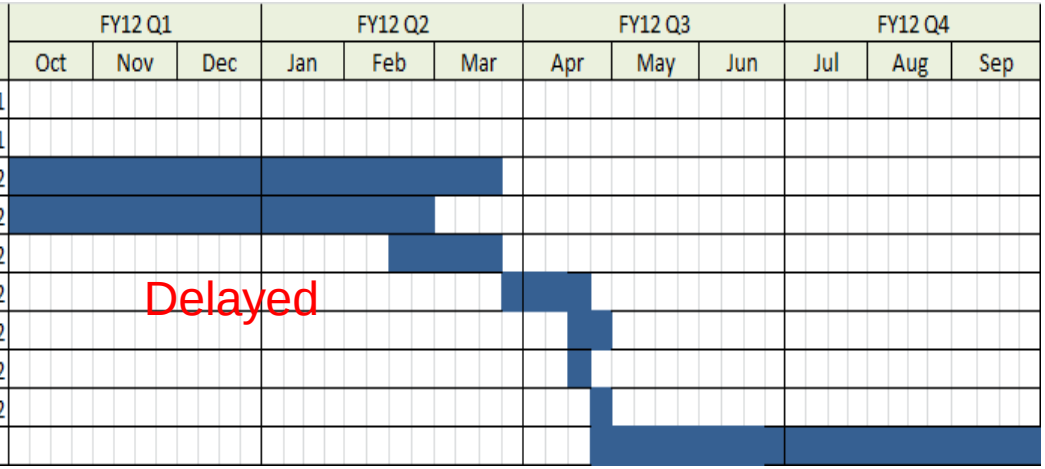
- Develop the code to produce the C-RDR.

Project Risks

- **ATMS Developer is being redirected to new development. ATMS C-RDR will be delayed. Schedule will be updated when resources are available.**
- Complexity of the NPP/JPSS RDRs and operational software
- Operational software is under maintenance, updated versions may affect C-RDR ported version.
- Developer shares time working NPP and branch management issues.

Project Schedule

ID	Task Name	Status	Start	Stop
1	Analysis	Complete	10/29/2010	2/10/2011
2	Design	95.00%	2/11/2011	4/29/2011
3	Development	35.00%	5/2/2011	3/25/2012
3a	Develop ATMS processing component	70.00%	5/2/2011	2/29/2012
3b	Test ATMS processing component	5.00%	2/18/2012	3/25/2012
4	Integration		3/26/2012	4/18/2012
5	Test		4/19/2012	4/26/2012
5a	Dry Runs		4/19/2012	4/25/2012
5b	System Acceptance Test		4/26/2012	4/26/2012
6	Operational		4/27/2012	



C-RDR System Infrastructure

C-RDR Product: Infrastructure to automate the production of the C-RDRs.
GEOSS Societal Benefit: None

Project Status

- **Created initial VIIRS C-RDR from CLASS mission data in integration environment.**
- **Setting up the automated data flow from CLASS in the integration environment.**
- Development environment is set up on the CICS network.
- Working on managing queues and processing jobs.
- Locating, validating, and statusing files for processing.
- Developing code for ingest detection and processing.
- C-RDR needs to handle CLASS manifests. SIPGenSys will not.
- Completed NPP 14 day Ground Operations Exercise (GOE).
- Completed throughput testing for SIPGenSys.
- Creating database tables and access procedures for config files.
- Setting up configuration files and software for the ingest test.

Next Action / Milestone

- Integrating and testing the system infrastructure.

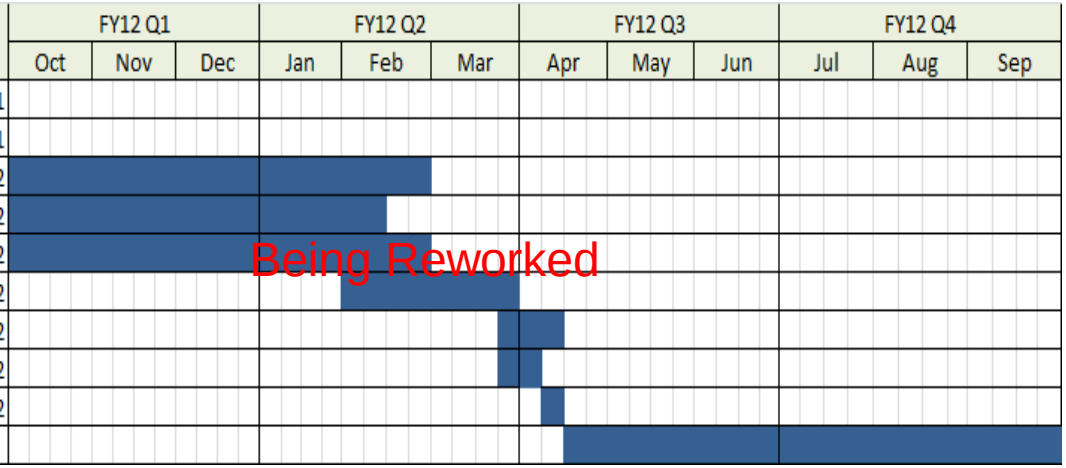
Y

Project Risks

- Need to develop an automated re-request mechanism for CLASS.

Project Schedule

ID	Task Name	Status	Start	Stop
1	Analysis	Completed	9/29/2010	4/22/2011
2	Design	90.00%	4/25/2011	7/8/2011
3	Development	80.00%	5/31/2011	2/28/2012
3a	Develop infrastructure	90.00%	5/31/2011	2/14/2012
3b	Test infrastructure	70.00%	9/27/2011	2/28/2012
4	Integration (Phase 2)	5.00%	1/31/2012	3/26/2012
5	Test		3/23/2012	4/12/2012
5a	Dry Runs		3/23/2012	4/11/2012
5b	System Acceptance Test		4/12/2012	4/12/2012
6	Operational		4/13/2012	



CDR Program Office

IOC to FOC using PATMOS-X as prototype

Weekly Report – June 1, 2012

1. White Paper (was April 21)

- Final draft will be baselined as Rev.1 and distributed.

4. Build and Test Infrastructure (was May 26)

- Created script that makes builds for debugging and test coverage measurement, in addition to normal build. Special builds will be helpful in deriving the architecture.
- Bugzilla install in progress. Requires numerous 3rd party components.

5&6. Familiarization Runs and Diagnostics (July 7)

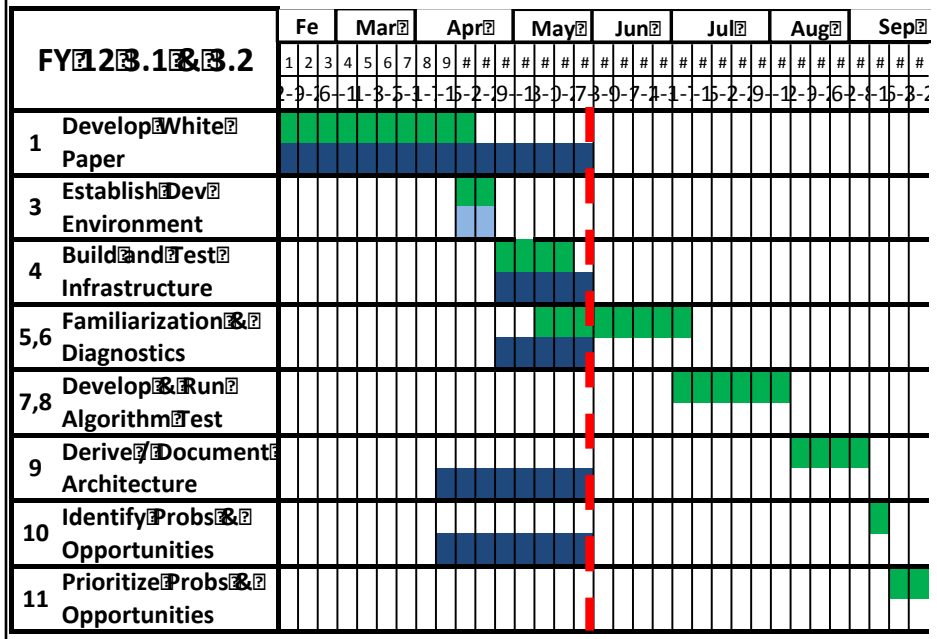
- Code starts but has not been run to completion yet.
- Position-dependent run-time options file and input file list are difficult to use and introduce testing risks.

7&8. Develop & Run Algorithm Test (August 11)

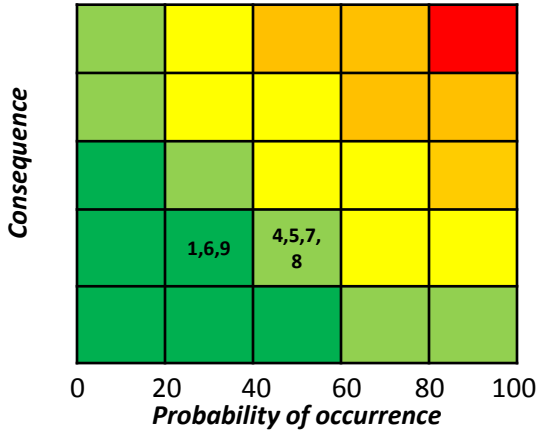
- Awaiting reply from PI Andy Heidinger

9. Derive and Document Architecture (September 8)

- GST Understand tool has identified massively complex subroutines that are untestable, including 9 routines (of 691 total) with Cyclomatic Complexity (CC) > 100, and 24 additional routines with CC > 30. Literature recommends a CC limit of 15, reflected in CDRP Coding Stds.



Risk Matrix



Top Risks and Mitigation

R3. Ongoing parallel development by PI

- Use good differencing tool. Incorporate only those changes that have a good justification from the CDR perspective.

R8. Personnel on task at maximum work load

- With recent budget cuts to the CDRP the personnel still engaged on this task are at maximum work level. More budget challenges could result in the loss of the remaining key personnel and jeopardize the completion of this task.

R10. No sustainable commitment for independent Quality Assurance

- Short term financial resources available. GST has potential consultant to assist with development of CDR Program Quality Assurance Plan.

R11/R12. Internet access from NCDC, direct or via CICS Wireless

- Use contractor/personal equipment to access GST cloud via CICS wireless and internet or personal internet connection. Only using SSH at present.

CDR Program Office

IOC to FOC using PATMOS-X as prototype

Project Risk Report – Top Ten Risks [1]

Risk ID	Title	Description	Consequences	Type	Impact	Probability	Magnitude	Owner	Mitigation Strategy	Mitigation Action
3	Ongoing parallel development by PI	Ongoing work by the PI may require repeated resynchronization	Tedious and costly rework	Schedule	4	70%	**2.8**	Newport	Control	Put all code drops in version control; use good code differencing tool; accept only chnages that are well justified by PI and science POC
10	No sustainable commitment for independent Quality Assurance	TBD	TBD	Resource	3	90%	**2.7**	Cecil	Accept	Short term financial resources available. GST has potential consultant to assist with development of CDR Program Quality Assurance Plan.
8	Personnel on task at maximum workload	With recent budget cuts to the CDRP the personnel still engaged on this task are at maximum work level. More budget challenges could result in the loss of the remaining key personnel and jeopardize the completion of this task.	Failure to meet success criteria	Resource	5	50%	**2.5**	Cecil	TBD	TBD
12	Internet access from NCDC via CICS wireless	CICS wireless is provisioned as best effort with no Service Level Agreement	Lost productivity from dropped or slow connections.	Resource	4	50%	**2.0**	Torres/ Wilkins	Avoid	Work from home during periods of high wireless use
4	Unforseen dependencies on third-party software (including compiler)	Application may have undocumented dependencies on specific versions of third	Dependencies must be discovered by trial and error	Technical	3	50%	**1.5**	Newport	Control	Create dependency list with new dependencies added as as soon as they are known; use
5	Multiple output formats	Existing code had HDF output while NCDC requires netCDF. Validation tools may not support both formats	May have to duplicate outputs in both HDF and netCDF	Technical	3	50%	**1.5**	Newport	Avoid	Analyze output interfaces; assign high priority to output interface work in Modification and Test plans.
9	Insufficient NCDC IT support	Recent layoffs and reassignments within the IT branch may reduce the level of IT support available	Slow turnaround of IT support requests	Resource	3	50%	**1.5**	Torres/ Wilkins	Avoid	Use GST private cloud, contractor and personla equipment, CICS wireless and internet connection, home internet connection
2	Scientific Point of Contact Availability	Scientific Point of Contact may not be available when needed due to other responsibilities	Delay in understanding algorithm and scientific context	Schedule	3	50%	**1.5**	Cramer/ Cecil	Control	Ensure Tom and his supervisor are adequately loaded on schedule; obtain formal supervisor approval for Tom's participation
13	PI Availability	PI may not be available when needed due to other responsibilities.	Delay in understanding algorithm and scientific context	Schedule	3	50%	1.5	Wunder	Control	Communicate frequently with PI
7	Unclear success criteria	Project has been exposed to NESDIS as an FY12 task, but success criteria have not	Possible CDR Program termination	Business	5	30%	**1.5**	Glance	Control	Follow task plan and focus on proofing the process. Hold formal weekly meeting with
6	Stability of CICS environment	Storage: CICS StoreNext needs good metadata controllers but these cost too much,hardware has been recycled. CLASS had painful experience with StoreNext	CICS environment may be unavailable when needed; work may be lost	Resource	2	70%	**1.4**	Newport	Avoid	Perform trade study for migration of the development environment to NCDC Blade Center; GST system; or elsewhere. **4/16/2012: Move to GST private cloud.**
11	Internet access from within NCDC Accreditation and Assurance boundary.	Failure of NCDC network will prevent work from being perfomed using government equipment.	Forces reliance on CICS, contractor owned, and personal equipment and infrastructure.	Resource	4	30%	**1.2**	Torres/ Wilkins	Control	Establish and maintain alternative means for accessing the development environment
1	CICS System Administrator Availability	CICS System Administrator Scott Wilkins may not be available when needed due to other responsibilities	Delay in setting up development infrastructure, including a public-facing web server	Schedule	1	50%	**0.5**	Newport	Avoid	Direct Bernardo Torres to perform this work. **4/16/2012: Move to GST private cloud.**

CDR Program Office

IOC to FOC using PATMOS-X as prototype

Project Risk Report – Top Ten Risks [2]

Week Ending June 1, 2012