

Karen Hughes

From: Prof. Bringi <[REDACTED]>
 Sent: Sunday, 4 March 2012 11:50
 To: Peter May
 Subject: Re: CP2 update? [SEC=UNCLASSIFIED]

That is good news on CP2. I wish there were funds to buy a new pedestal!
 The NASA science goals that seem relevant are extracted below from the NRA:

1. Use of satellite and field campaign data to study precipitation and microphysical processes, particularly for mixed phase and frozen precipitation, and their improved representation in cloud resolving and climate models;
2. Error characterization of satellite rainfall retrievals and/or ground-based measurements to facilitate multisatellite algorithm development and the convergence between satellite and GV rain estimates

I agree that we should meet to toss ideas around as to how best to "fit" our collaboration with above. The DOE data from Manus sounds good too. Leverage with what you are doing for DOE? I would greatly welcome a visit in May to CSU. I have access to some travel funds for you say around \$2,000 if that would help.

Regards

Bringi

On 3/3/2012 4:33 PM, Peter May wrote:

- > Bringi,
- > We will be repairing the system and the timeline looks like ~ September. If it happens again I think we are in deep trouble.
- >
- > At Darwin there is a dual Ka-X band system that is not yet operational but should be soon. Likewise at Manus and there is the dual Pol C-band radar at Manus as well, but it is transmitting simultaneous H and V but I haven't looked at the data yet, but we will be.
- >
- > I'll be very happy to be involved. Maybe should look at me visiting Colo State sometime?
- >
- > Hope this helps
- >
- > Peter
- >
- > -----Original Message-----
- > From: Prof. Bringi [mailto:[REDACTED]]
- > Sent: Sunday, 4 March 2012 10:18 AM
- > To: Peter May
- > Subject: CP2 update?
- >
- > Hi Peter:
- >
- > The next cycle of NASA PMM science team proposals are due 30 June 2012
- > with notice of intent by mid_april. I would like to continue work with
- > CP2 radar.
- >
- > I heard from Bob Bowie that the pedestal damage might not be as serious as the first time and that NCAR was/is involved?

>
> What I need is your thinking on the future of CP2 (whether it will be repaired and operational again by end of 2012)? If so I'd like you to be a "collaborator" again on my proposal, basically focusing on rain and mixed phase precipitation...which will include other sites/radars...eg CHILL (since we now have a dual-band S,X capability), the site in S.Korea operated by Gyuwon Lee, and an open ocean site like Kwajalein. I'd like to add in Darwin...what do you think? is the DOE dual-band radar operational (as I recall Ka-X bands).

>
> If CP2 is operational, might be able to make a visit in Nov 2012 if travel funds are available and if my NASA grant is successful. Also, Darwin site.

>
> I am traveling less now due to [REDACTED] S47E
[REDACTED] S47E

>
> Best,
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> Bringi
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> --
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Karen Hughes

From: Tom Keenan
Sent: Monday, 5 March 2012 11:06
To: Alain Protat
Cc: Peter May; Tom Keenan
Subject: RE: 5th Global Precipitation Mission Ground Validation Meeting - Toronto [SEC=UNCLASSIFIED]

Security Classification:
 UNCLASSIFIED

Alain: Thanks. Have discussed with Peter May and I will propose that he attends for this one. Cheers Tom

From: Alain Protat
Sent: Monday, 5 March 2012 10:56 AM
To: Tom Keenan
Cc: Peter May
Subject: RE: 5th Global Precipitation Mission Ground Validation Meeting - Toronto [SEC=UNCLASSIFIED]

GPM GV is certainly an important topic in the future of CP2 and CPOL radars, so it is important that someone from our team goes. Peter and Beth are the GV contact people, isn't it ? If none of them can go, I certainly could represent CAWCR there, and that would be a good opportunity to have discussions around HighWC with Walter. However, I don't have an approved trip left for this FY, and I already have two trips overseas planned in June (CloudSat CALIPSO) and September (HighWC / HAIC), so I am not really looking forward to another trip overseas in between ! But it is important to be present there, that's for sure. If Alan can go then all good, otherwise I'll do it.

Cheers,
 Alain

From: Tom Keenan
Sent: Monday, 5 March 2012 09:51
To: Alain Protat
Cc: Peter May; Tom Keenan
Subject: FW: 5th Global Precipitation Mission Ground Validation Meeting - Toronto [SEC=UNCLASSIFIED]

Alain: Here is another request? Would appreciate your thoughts. An alternative would be Alan Seed, Tom

From: Joe,Paul [Ontario] [mailto:████████████████████]
Sent: Saturday, 25 February 2012 5:25 PM
To: Tom Keenan
Subject: 5th Global Precipitation Mission Ground Validation Meeting - Toronto

Dear Thomas Keenan

The Global Precipitation Measurement (GPM) mission will launch its core satellite in 2014. The GPM Core Observatory will carry an advanced radar-radiometer system to unify and advance precipitation observations from space. International science collaboration in GPM Ground Validation (GV) plays a vital role in refining remote sensing algorithms and in assessing the quality and utility of satellite precipitation products in different climate and geographic regimes. In a series of international planning workshops held in the United Kingdom, Taiwan, Brazil, and Finland, GPM has established a framework for international GV science collaboration to support pre-launch algorithm development and post-launch product evaluation.

In view of your expertise in precipitation science and measurements, we cordially invite you to participate in the **Fifth GPM International GV Workshop** hosted by Environment Canada in coordination with NASA's Precipitation Measurement Missions Science Program. The workshop will be held 9-12 July in the

Patrick McTaggart-Cowan auditorium at Environment Canada Headquarters (4905 Dufferin St.) in Toronto, Canada.

The workshop will focus on the following themes:

1. Assessment of current satellite algorithms/products using GV measurements.
2. Key GV measurements for advancing satellite retrieval algorithms in middle and high latitudes.
3. GV measurements addressing outstanding algorithm issues in the low latitudes.
 - a. Warm rain over land
4. Results from recent field campaigns
 - a. LPVEX: Light rain and snow
 - b. MC3E: Mid-latitude convective and stratiform rainfall
 - c. GCPEX: Falling snow

Special cross-cutting topic: Defining particle size distributions (PSDs). Establishing common approaches for consolidating microphysical information in a form suitable for application to GPM retrieval algorithms.

5. International GV partnerships under development
 - a. HYMEX: Mid-latitude orographic rain and flooding
 - b. GO-AMAZON (CHUVA)

The anticipated outcomes of the workshop will include:

- a) an improved understanding of high-latitude GV priorities and practices;
- b) assessment, definition, and prioritization of remaining key algorithm issues in the tropics;
- c) better understanding of the quality and utility of current satellite products, especially in the middle and high latitudes;
- d) increased coordination of international field and measurement initiatives contributing to GPM GV objectives; and
- e) a consensus on recommended approaches to making liquid and frozen PSD measurements and an improved understanding of how such information can be incorporated into GPM retrieval algorithms.

Participation in the workshop is by invitation only. A workshop website will be established shortly to provide online registration, updated logistic details, workshop agenda, and other related information as they become available. Please hold those dates. Thomas Keenan

We sincerely hope that we will have the benefit of your participation at this workshop and look forward to hearing from you at your earliest convenience.

Kind regards,

GPM 5th International GV Workshop, Organizing Committee
Paul Joe, and Arthur Hou, Workshop Co-Chairs
Walter Petersen, NASA GSFC/Wallops Flight Facility
David Hudak, Environment Canada

CAWCR commentary around risk assessments on CAWCR

Close research facilities at Redbank Plain (Qld)

Already has a reduction in asset spend (~ 150K/yr).

Significant use of soft money for system maintenance and upgrades.

Currently requires some work – S31 funds are available for this.

Testbed for technology evaluation for high impact weather. Some work is already underway. This includes radar application development affecting OEB and applications development for services. Risk to operations in current service is low, but testbed will provide demonstration of technology allowing increased automation, reduced false alarms and improved flood warning.

Original case for investment is still valid.

Has attracted significant external support in past and expect more opportunities in the future. Are currently in active discussion at state and local level regarding projects.

Move to a model of expanded external support for the program and re-assess priorities in 3-5 years?

Karen Hughes

From: Bruce Gunn
Sent: Monday, 7 November 2011 17:56
To: Phil Purdam; Peter May; Ken Glasson; Alain Protat; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Dennis Klau; Ben Annells; Cathy Kingston
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Security Classification:
 UNCLASSIFIED

Hi Phil

Happy for you to visit on those dates (however I personally will be on leave).
 Suggest you coordinate with Cathy Kingston and Ben Annells.

To the audience more generally....

I don't see a problem with the CP2 reflectivity and velocity data going to the forecasters operational pcs, but it must be clear that CP2 does not form part of the operational network of radars that support forecasts and warnings. If CP2 goes down for some reason then there should be no expectation of returning it to service for the sake of operations. Additionally if one of Marburg or Stapylton go down, then the availability of CP2 should NOT be used as a reason to delay call-out of techs to get the operational radars running again.

Before we can envisage forecasters evaluating the classification product it would be good to have some training, or at least specially prepared background reading material (not a bunch of papers please). Ideally there would be some evaluation plan developed.

regards

Bruce Gunn

Australian Bureau of Meteorology | Weather and Ocean Services Branch
 PO Box 413 Brisbane Qld 4001

T [REDACTED] | M [REDACTED] | F [REDACTED]
<http://www.bom.gov.au/>

From: Phil Purdam
Sent: Monday, 7 November 2011 3:48 PM
To: Bruce Gunn; Peter May; Ken Glasson; Alain Protat; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Dennis Klau; Ben Annells; Cathy Kingston
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Hi Bruce,

The current Beta versions of 3D-Rapic will display the classification product, as will the soon to be released operational 3D-Rapic V6.01.

It will be a few weeks before I will be able to get up to Bris, need to finish some rainfields work first and also make sure any 3D-Rapic operational release issues are resolved quickly.
 As well as the CP2 work, I would like to spend some time in the RFC to discuss and get feedback regarding 3D-Rapic and rainfields new features, wish lists etc..
 Any preferred dates from your side of things?
 28Nov might be a reasonable target date for me.

I would anticipate the visit being around 2 weeks all up.

Cheers,

Phil

* Phil Purdam *
* Centre for Australian Weather and Climate Research (CAWCR) *
* A partnership between CSIRO and the Bureau of Meteorology *
* Weather and Environmental Prediction Group *
* Radar Applications Team *
* Email: [REDACTED] *
* Phone: [REDACTED] Fax: [REDACTED] *
* GPO Box 1289K, Melbourne, Victoria 3001, Australia *

From: Bruce Gunn
Sent: Friday, 4 November 2011 18:40
To: Peter May; Ken Glasson; Alain Protat; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Phil Purdam; Dennis Klau; Ben Annells; Cathy Kingston
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Hi all

I think we would be happy with the CSRP configuration every 6mins to coincide with Mt Stapylton.
Look forward to having the classification products to look at.
Will this need a special version of 3drabic?

regards

Bruce Gunn
Australian Bureau of Meteorology | Weather and Ocean Services Branch
PO Box 413 Brisbane Qld 4001
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From: Peter May
Sent: Thursday, 3 November 2011 2:16 PM
To: Ken Glasson; Alain Protat; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Bruce Gunn; Phil Purdam; Dennis Klau
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Ken,
Agree steady PPI volumes only.
Phil needs to organise dates with you

Peter

From: Ken Glasson
Sent: Thursday, 3 November 2011 3:06 PM
To: Alain Protat; Peter May; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Bruce Gunn; Phil Purdam; Dennis Klau
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Peter, Alain and Alan,

- CP2 operates with a fixed PRF of 1000hz, it is not easily configurable using the current control software... so no, a separate 'Surveillance scan' is not run. The volume scan is a surveillance scan in itself – just no long range capability.
- The CP2 Scan scheduler does NOT currently allow for variable scanning speeds within a volume (i.e. higher speeds at higher tilts), which is one way you could perhaps slightly increase the number of tilts. There are no current plans to change this.
- I would strongly urge that you DO NOT consider scanning strategies involving 'Sector scanning' modes (i.e. scans that involve reversal of rotational directions), other than for specific short term project purposes (e.g. the cloud seeding project). It is far too demanding on the radar mechanics – particularly considering the inertial weights involved at CP2. So that rules out Alain's option 2...
[Alain: you need to visit here so that you have a better appreciation of what is involved... There is nothing like seeing a radar first hand to give you that, especially one as big as CP2.]
- An alternate to Alain's suggestion would be to have two 10 tilt scans that both do the lower 2-3 tilts and use different higher tilts to cover the extra tilts on Stapylton on a 12 min cycle...
Re RHIs – we currently only have a 3-4 second gap at the end of each 10-tilt volume, so no, no chance of regular RHIs. Only interactive RHIs would be recommended at this time, and only when the radar is manned on-site.

Phil coming here... good, when?

Test equipment repair purchase order was requested Monday and is progressing. Is delayed in Finance section due to back logs and other red-tape issues.

No progress on the TO4 (part time) at this stage – Peter Adamson and I need to get together on this. He is just back from leave this week and heavily involved in trainee interviews and other issues for the time being.

Ken

From: Alain Protat
Sent: Thursday, 3 November 2011 1:35 PM
To: Peter May; Ken Glasson; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Bruce Gunn; Phil Purdam; Dennis Klau
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Hi Ken, Peter,

There seems to be only two viable options if you want to maximize time and space coincidence between the two radar samplings :

- 1) use the 10 lowest tilts of Mt Stapylton (as suggested by Peter)
- 2) do half PPI scanning but all tilts (and alternate west part and east part of PPI) ?

Depends what is most critical scientifically. If you want good and rapidly-updated rainfall estimates, but don't care too much about topping the storms, then I would go for solution 1.

If you want best dual-Doppler analysis, good vertical coverage of the storms, and best colocation of the two radars, but can accept 1/2 time resolution on each side of the sampled region, I would go for solution 2.

I think both solutions are OK for climatological purposes.

Also depends on the meteorology of the area, which I am not familiar with yet ...

No time for selected RHIs ? Maybe only for case studies ?

My 2 cents ... Maybe more questions than answers in this email, sorry !

Alain

From: Peter May
Sent: Thursday, 3 November 2011 13:57
To: Ken Glasson; Alain Protat; Alan Seed
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Bruce Gunn; Phil Purdam; Dennis Klau
Subject: RE: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Ken,

Great progress on the Sband.

Re tilts - Alan S may wish to coment - use the lowest 10 tilts of the Mt Stapylton.

Assume we aren't doing a surveillance scan?

Re classification products and 3 D Raptic – Phil has indicated a willingness to go on site and assist.

Please proceed with the purchase order.

Any movement on getting the TO4 position advertised?

Peter

From: Ken Glasson
Sent: Thursday, 3 November 2011 1:51 PM
To: Peter May; Alain Protat
Cc: Brad Atkinson; Peter Adamson; Jim Davidson; Bruce Gunn; Phil Purdam; Dennis Klau
Subject: CP2 Radar Use....? [SEC=UNCLASSIFIED]

Peter and Alain,

In response to Peter's comment below about replicating Mt Stapylton radar's volume:

Mt Stapylton does 14 tilts rotating at 18 deg/sec in a 6 min update cycle.

In Dual Pol mode – CP2 currently rotates at just over 10 deg/sec and can only achieve 10 tilts in the 6 Min update cycle period.

Dual pol requires more hits to average for quality data, so it is difficult to see how we could closely replicate Mt Stapylton, but I am pretty sure that was the compromise that was done in setting up the CSRP Volume scan that we are currently running. Happy to accept suggestions though.

The current Status of CP2 is:

Running the 10 Tilt CSRP Volume scan – 10 tilts (0.5,1.0,1.7,2.4,3.2,4.7,6.5,9.1,12.8,17.8) @ 10.6 deg/s Az on a 6 min cycle.

The S-Band system is running quite reliably and has been fully calibrated.

The X-Band system is currently off awaiting a solution to the waveguide pressurisation leak – little has progressed at this time. I will shortly seek the purchase of some waveguide pressurisation windows to suit the X-Band waveguide and try sealing off the feed horn and

see if that fixes the problem. (I will also procure some waveguide to coax adaptors to allow proper calibration of the X-Band at the Feed horn point and not just at the LNAs)... I also need the CP2 Signal Generator repaired to re-do the X-Band Cals. (it died recently – and is awaiting purchase order creation to get under way)

Bringi is keen to see the X-Band collecting data.

A few of the software products and computing systems are currently not functioning or need updates (this is my current focus):

- Particle ID – I think this needs an update on data feed from AIFS, but need to confirm this with Mike.
- 3D Raptic Products – Phil?
- Some of the local display functionality not running, though most is good now and the missing stuff is not a hinderance.
- Only one of the 3 display workstation has been upgraded to CentOS 6
- cp2server also needs to be upgraded to CentOS 6

Any work on the antenna systems needs an extra person on-site to assist, though I can do some of the work below 2m height with the antennae inverted.

Borrowing of Engineering staff requires approval from head office STCO currently as I understand... (Peter Prokop going to Manus Island unexpectedly recently comes to mind....?)

Where to from here?

Ken

From: Peter May
Sent: Wednesday, 26 October 2011 11:12 AM
To: Ken Glasson; Alain Protat
Cc: Margaret Hughes; Angela Arriaga; Brad Atkinson
Subject: RE: 1-3672158107 for Bureau of Meteorology [SEC=UNCLASSIFIED]

Ken,

Yes – I approve the spending,
On another matter, can we discuss scan strategy at some stage. I would like to replicate the Mt Stapylton volume as much as possible, don't worry about the low PRF scan, but the same tilts and time sequence (6 min?) for the volume. I assume this would match the regional requirements as well as make it simpler for rainfields etc.

Regards,

Peter

Peter

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or

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