Original notes by Schwartz Revisions by Ferrare

Revised version 1: 12/16/2002

12-11-02
ARM IOP meeting

Ferrare, Schmid, Jonsson, Strawa, Gautier, Redemann, Liljegren, Feingold, Ghan, Eilers, Voyles, Penner, Arnott, Sheridan, Schwartz, Pilewskie, Bucholtz, Ji, Rissman, Cress, Flynn, Kirchstetter, Kinne, Levy, Voyles, Hudson, Halter, Koontz, Andrews, Bond

Brief Presentations

Ferrare: Overview
Gahn Indirect
Feingold Indirect by Raman.
Schwartz sfc chem and microphysics
Sheridan on Reno expt
Sheridan on aos measmts

Cress gave introductory remarks and indicated that IOP depends on getting federal budget passed early next year. Contigency plans will be required if and when budget is further delayed.

After discussion of objectives, brief status reports from individual investigators. Slides from these presentations are at http://www.tap.bnl.gov/arm_acp_aerosol_iop/

Schwartz asks and it is confirmed that pmel is doing daily chem analyses

Pat S is surprised over the teom

discussion over time resolution of kirchstetter measmts

Pat needs to talk to Wang

Pat notes need to make decisions pretty soon.

Discussion of Cahill size resolved composition. Rich says might come to show what he can do, and then to make analysis. Can we pay travel costs? Had a series at ace asia. minimal requirements. 3 hour resolution. (Rich is trying to get more information (costs, logistics, etc.) about Cahill).

Jack Ji gsfc: SMART instrument suite. reporting on radiation instruments. New sun and sky photometer faster than cimel. Hopes to bring trailer out to sgp. gases: NO2. Particle sizer. Second trailer. manpower concerns.

Schwartz notes need for NO2.

Hudson on DRI CCN spectrometers. Expects 2 instruments. one from 1% to 0.01%; one from .1% to .01%. Expects fairly high concs at arm site. has extended to 0.002% equiv to 1 µm salt particle.

hudson speaks to using a classifier before the ccn spectrometer

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Arnott: photoacoustic ground based unit ready. possible get crd and neph all at 532; he can also measure NO2. distinguish by inlet switching with filter; can get at 0.3 ppb.

aircraft wants to work at 675 nm;

DRI would also like to bring along neph at 532 nm for ground based operation. Then we'll have a full suite, scatt, ext, and abs, all @ 532 nm. The DRI neph also has the lowest truncation angle, by far, of any nephs out there, so it captures a more complete picture of the total scattering cross section.

The DRI ext instrument can also be used to assess NO2 along with the photoacoustic instrument. The UW extinction effort will also need to consider the effects of NO2.

arnott has calc dwell time at altitude to make his measmts. would need 10 min avg time to get signal at 4 km. suggests 10 points requd.

ITEM FOR DISCUSSION: time on leg.

Mission Plans up and going. People send draft mission plans to Rich. Rich and Jens to Draft and post on web site. Prior to jan 8.

Strawa CRD. designed for aircraft. speaks to discrepancies at reno expt. All the CRD's agree w one another and 9-15% below scat plus absorption. suggests a mystery. hopes to study further in lab in January. Maybe related to sampling or wavelength.

Bucholtz aircraft radiometers. platform issue not resolved.

Pilewskie: net flux radiometers. worked fine in November. stabilization issues.

Beat on sun photometers. flux divergence. concern over stabilized platform at low aerosol optical depth errors in flux divergence. hopes will happen.

jonsson cirpas package. issues of how to set knobs of instrums to meet project objectives. channel boundaries. issue of convert pulse to diameter for index 1.3 to 1.7 gives a factor of 4 in diameter from backscatter fraction of caps. So limited utility. much narrower in forward scatter. 50% unc in size. caps is ambient; pcasp is dry.

fssp also has a choice of ranges. depends on gain limit range to 16 µm. how switchable. easy. before flight; maybe in flight. pcasp is pretty tight on ref index. possible to infer ref index? get qual idea of ref index - higher or lower than 1.45. also APS aerodynamic; inlet; not ambient; cut at 10
m down to 0.5. (Haf…what specific information do you need to set knobs? Is it sufficient to simply know whether mission is geared toward aerosols vs. clouds?)

Tracey Rissman (caltech) CCN. Instrum description 3 supersat 0.2, 0.5, 0.7 based on crystal face instrums. shows results and calibration instrums. will have old instrum on the ground. ISSUE of facilities requirements. One supersaturation. Needs decision where to be set. (Steve Ghan, Graham Feingold…can you help advise on instrument settings?)

Covert not present; has associates who will be at site.

(UW proposed instrumentation:)

Aerosol scattering/hemispheric backscattering on CIRPAS Twin Otter with TSI nephelometer at 450, 550, 700 nm. Covert/Elleman.

Aerosol absorption on CIRPAS Twin Otter, 466, 530.5, 659.7 nm with modified PSAP. Covert/Elleman.

Aerosol scattering as function of RH on CIRPAS Twin Otter at 550nm, at 30%, 60% 85% RH CIRPAS Twin Otter. "Three RH humidograph". Covert/Elleman.

Aerosol Chemistry on CIRPAS Twin Otter with MOUDI sampler. Hegg.

Aerosol extinction at the AOS, 466, 530.5, 659.7 nm with UW extinction cell. Covert/Ahlquist.

Aerosol absorption at the AOS, 466, 530.5, 659.7 nm with modified PSAP. Covert/Ahlquist.

Possible proteus involvement for a week. Addl funds could expand. Too early to say. Cress notes financial problems. Logistics? Ted says greenwood is flexible; does not anticipate problem at that end.

could the stabilized platform be moved? No info. ACTION: follow up with bolton on funding and moving platform. Cress to start on this. Platforms not identical; may involve aircraft mods, and FAA approvals. they are trying to make platform more robust as it is.
(Anthony Bucholtz, Peter Pilewskie…can you follow up with Tooman/Bolton to determine if Proteus platform is feasible for Twin Otter?)

BREAK

Logistics. Haf Jonnson. Sketch of cirpas cabin. baseline instrums. data system.

will borrow lwc probe. says has a mount for a moudi. daq gives screen for flight scientist. data via satcom to ground. ISSUE of satellite coverage. Need to check out. they have computer at ground talking to the plane. Network on ground will give same window as on aircraft. has chat capability. Better than phone because of noise on plane. MOUDI'S 8 sets of 6 filters. Switchable in flight; ISSUE who will use analyze?

(Dave Covert and Dean Hegg will analyze MOUDI data and propose to follow the sampling and chemical analysis protocol used in ACE Asia and other ONR campaigns. They await funding decisions to know if able to proceed or not. They will provide input to flight plans to accomodate the MOUDI sampling for optimum mass loading.)

Haf is willing to fly, or one of our group. Need some training. Agreed for Haf to be the flight scientist; Beat as back up.

Suggests need to integrate prior to March and test. Haf send rack to tony, pat arnott. Standard 19 x 24 inch rack. pull out of your rack and put in Haf's. Possible vibration insulation of insts on rack. Little shock absorbers.

Issue of computers on aircraft. hard drives are rated to 10000 ft. Prob of crash increases with low pressure and vibration. Haf has gone to flash disks? Pat says no problems at 12000 on laptops. Beat as well.

Rich asks about doe safety review. Ted replies unique circumstance. US navy owned aircraft exempts from doe review. DOE review has been done. No problems.

Ground ops requirements: Scientists hands off for one hour prior to launch; hands on is prior to the hands off. Crew member must be present when scientist needs access. Power from land lines; keep things running till take off.

NEED TO TALK ABOUT aircraft and site visit. Ted wants meeting with vance and FAA needs aircraft person along. Requires pilot, Beat. Will need a set of flight plans. Need to be reviewed by doe safety committee. Approvals requd. Then constrained to these. Flight plans require safety, deconflicted. No night flights; Whiteman not participating. Graham might want night flights if clouds there and not otherwise. We are free of vance below 7000. (No interest for coordinated site visit.)

Below 1000 ft? Want to go to 300 ft AGL. Pat S has list of obstacles.

Coordination with Proteus? Keep it high.

flight hours 60 total 12-15 @ 4 hrs, with 3-5 coordinated flights with iap. 2/3 for clear sky; 1/3 for cloud.

Need to prescribe altitudes for intercomps. Need to specify leg durations. question of whether iap aircraft has duration.

Disc of moudi. Need 15 min. Who to analyze? (see above.) single filter instead of stack. Wont know comp

Legs: not straight. will be racetracks or the like. ted notes obstructions. Jens notes concern of hitting own exhaust.

Rich notes issues of bank angle. need to stay in same compositional air for arnott. arnott hoping for more laser power. Pat sheridan says fly crosswind.

Graham wants non precip bdy layer clouds Cu or Sc, wants some convection. Disc of flight patterns, sampling. Doesnt want some advected in stratus. Go over SGP to get remote sensing info. Wants pdf's of aerosol and cloud. Sub cloud and in cloud. Wants column. Ted says need to settle on some numbers. Bring flight profiles to meeting. then need doe review. ACTION ITEM Get your flight plans to rich so we have a set of canned plans. Rich to take lead. Jens work with. Make revs and put on web page. Jens suggests run by the pilot. Mike. Haf says he is willing to talk. Need a menu. Sometimes one sometimes another, or compromise?

Ted suggests see arese science plan available on the web mission 1, 4, etc.

Ted reviews the participant questionnaire. stresses its importance.

Discussion of extra sondes. Standard is 4 x per day. Rich notes imptce of vertical profiles. extra sonde @$200.

Rich needs to get the ball rolling on questionnaire. On the arm web page. Forms and procedures.

Tony notes need to discuss inlets.

Liljegren notes site and safety issues.

Pat 60 l/min flow available. 19" rack space. 30 inches deep. Maybe get dave covert's long path instrum ok 14 ft.

Need to set deadline for participants to commit. Pat wants to see it sooner than later. Possibly using addl trailer or guest instrum facility.

Sees issue of need to get same elevation of aerosol above sfc. he samples at 10 m and 2m is of problematic comparability. Need stack. Pumps. Can make stack: little bit of time effort and money.

Need details of flows, instrum size. Pat needs to have this info.

Ted notes that a new stack requires logistics and safety issues; doesnt see as a big deal.

Pat needs some baseline change requests. Permanent mods. Issue of who pays.

Deadlines.

Need to decide if stack can be put on the guest investigtor facility. If yes, then seems to go there. issues of interference. Michalsky RSS. Jim says not there. Beat thinks his stuff is there. So prob not an interference problem. ACTION touch base w joe. liljegren

DEADLINE Pat says Jan 15 for questionnaire. Steve says need to allow for later, but jan 15 if you want to be sure you have a bearth on the boat.

Concensus to go with Utility Van near AOS? Comparable size to AOS. Arnott needs about 2 racks worth of space. Hudson comparable. Aerosol Mass spec comparable again. Has ports to accommodate flows.

Discussion of intercomps prior to the project. Calibration studies w synthetic aerosols like at reno. Sfc and aircraft. Pat says budget a couple of days for this.

Rich notes constraints. budget. Not part of the orig plan. cost, prioritization. De-integrating instruments off aircraft? or just the gnd based instrums. Bring generator to the aircraft. Or use the PSAP as a transferable standard. PSAP off of iap aircraft. tony asks about impact on flight schedule. Do it on down days? Lots of discussion. Inlet discussion. Limits on personnel times to do this. How long to do? Hours. How long to set up?

ACTION FOR PAT Need to duplicate splitter between 1 µm and 10 µm on Utility Van (U-Van) system.

Logistics and the like. Beat is collecting info from people. Table of people in the field.

Limited space at Ponca Airport. Issue of whether we need more space. Instrument room? Internet connections? Ted notes that the hangar is pretty well wired for internet access. Phone access? Haf notes they need two phones. one for pilots, one for satcom. We will write a contract with our requirements.

Sandia brought along their troops to do networking. Jimmy says they can set up a network. Haf sets up a local area network. Greenwood on cable. Need to set up with local ISP? Ted thinks that greenwood can supply. Issue of personnel and hardware. Guy Wilcox. Action: Ted make sure get into contract.

Issue of Met support. Haf no particular requirement. Haf needs flight plan the day before. Then can scrub any time. Pilots file 2 hours before. Their clock starts running then. Need 12 hour rest peroid betw flights. Don't push more than 5 flights a week. Two on one off is good. Two a day if necessary.

Daily calendar. Morning briefing 8 or 9 am. Take off no earlier than 10 am; back at latest by 7 pm. Post flight meeting. or evening.

Weather support. Rich can forecast. Not there the whole time. Site Scientist team can provide support. Don Bond volunteers to do briefings at least some of the time. ARM subscribes to private service. On previous occasions ARM has set up web pages with forecasts.

Max SZA? 70 degrees.

Coordination with satellite overpasses? Terra (morning), Aqua (afternoon) orbit information available via web.

Need regular coordination with faa and vance. person should not be too distracted by other things. pilot ok. Brian Cairns may come; need to encompass him too. Proteus too.

Potential site visits? Rich suggests anyone bringing an instrument out visit prior.

Will be an aerosol working group meeting on monday of the ARM science team. Rich suggests 9 am on the monday to avoid conflict with other working groups.

Data policy: prelim as early as possible; final by 6 months. Rich suggests 1 year. Some concerns over data that need a lot of processing. PIs should be be offered acknowledgment to coauthor. Refer to data sharing policy of arm. Any comments send to ted.

Tom Kirchstetter shows results from wavelength dependence of absorption. Are there filter artifacts? Or is this characteristic of the aerosol? Indication that uv absorption is due to soluble organics.

Tony asks about angle of attack issues.

Ted notes that this is a pretty complex iop more than most. planning issues. Sees elements in motion. No problems unless congress gives us problems. Keep eye on web site. Be real critical: do we have planning and support in place.

Action Item Summary:

ACTION (all): Rich needs to get a list of who is coming. what requirements will be.

ACTION (Pat S.) get cost to ted for modifiying the interior of the aos and cost of a second stack.

ACTION (Pat S.) Need to duplicate splitter between 1 µm and 10 µm on Utility Van (U-Van) system

ACTION (all) fill out questionnaires.

ACTION (Pat S., Pat A., Tony, Haf) Write up inlet and intercomparison issues and devise strategy

ACTION (all) Anyone with requirement for sondes should advise Rich by Jan 8

ACTION (all) develop flight plan with science objectives and flight requirements. identify critical and subcritical instruments. Identify required met conditions. Send info to rich

ACTION (all) identify required met conditions as part of mission statement.

ACTION (all) People who have requirments but not assoc with particular aircraft instrums should let us know.

ACTION (Jim Liljegren) need a floorplan of the uvan.

ACTION (Liljegren) contact Joe Michalsky about possible stack interference with sensors at GIF

ACTION (Ted): follow up with bolton on Proteus funding and potential for moving platform.

ACTION (Ted) set up jan meeting with FAA.

ACTION (Ted) address networking issues in Greenwood contract

ACTION (Rich) roll out finished plan at science team meeting.

ACTION (Ghan and Feingold) advise Rissman on CCN instrument settings

ACTION (Jonsson) what information is required to set knobs for aircraft size measurements?

ACTION (Rich and Jens) collect and filter flight plans. Draft final versions. Post to web.

ACTION (Steve) let ted? know about the existence of this web page; make link to it.