

Lessons Learned from the Dry Run

Mission Science

Level 1 Requirements

Early on, we were not able to fly as often as desired, and might not have used all flight hours. By the end, assuming an aggressive series of flights near the end, we got 10 flights in. Weather at WFF was a problem, primarily due to low ceilings, limiting takeoffs or landings. The lesson learned is that we should consider flying early and when the weather allows if good targets are available. [A lot of this will depend on how aggressive we can be with flights. Is it possible to do four flights in one week as we did at the end of the dry run with Ophelia?]

Better to alert (at 48 h) and cancel then to not alert and miss a possible flight opportunity.

Can we use the next-year hours if we run out? (yes)

Can we roll unused present-year flight hours into the next year? (yes)

Can we readily buy additional flight hours using reserves (only applicable to 2013-14)?

WFF has been asked for a summary of typical cloud ceilings and weather for the area.

What sort of uncertainty are the pilots willing to accept for weather at landing time when there is a possibility of low ceilings or we had a poor forecast of ceiling heights? Would they have to divert if we had non-VFR conditions?

Flight strategies

For environmental flights, we often used a large rotating figure-4 pattern centered on the storm. Do we need to consider other variations that better capture: 1) outflow regions, 2) trough interactions, 3) highly sheared storms that may have large deviations in center positions with height?

Staffing and Strategy

Hold discussions with pilots shortly after planning meetings when issues arise. Several questions came up during dry run calls that prompted off line communication with a pilot:

Would low ceilings forecast for landing time be sufficient cause for canceling a flight? We assume that landing early probably doesn't help with the low ceiling issue, but might help when rain is expected to move in. In the latter case, landing early (if still daylight) should be possible.

We learned that 2500 foot ceilings are necessary for chase, and chase is currently required. Further, For Class D airspace (vicinity of airfield) we need 3 statute miles visibility, 500 feet below, 1,000 feet above, and 2,000 feet horizontal clearance from any/all clouds

Is rain forecast at landing sufficient cause for canceling a flight? There was some discussion about delaying a landing due to rain, or loitering to wait out the rain. What are the limits of a window for safe flight/landing conditions?

Regarding the requirement for chase, there was some hope that the requirement to use a chase plane for landing might be relaxed or eliminated after the 2012 deployment if the FAA develops confidence in our ability to land the GH in marginal conditions (ceiling and visibility). It was not expected that the chase requirement would be relaxed during the first, 2012, deployment.

How close can we fly to land? This came up in regard to a storm in the Gulf of Mexico. Also, how close to a coastline can we release sondes?

With regard to the 48-hour notional flight planning, how many flight plans can we submit (3 ok)? Very often there are multiple targets of interest and we don't want to choose yet. When there are several targets of interest, it is important to consider the top two or three options and submit notional plans for all. If different plans involve different planes, remember the one to be used must undergo preflight the next day.

With regard to the 24-hour flight plan, must we down-select to one (yes, FAA notification and preflight time)? Once the target is chosen can the actual flight plan (figure 4 vs. lawnmower, for example) be changed in flight or prior to take off? [Usually for over-storm not an issue] If AV6 is the plane in use, can the dropsonde plan be altered after this submission? How much and when?

If we have back-to-back flights planned and weather at WFFs looks poor for landing of the second flight, can we bring the first one back early and send the second out a few hours earlier than originally planned in order to bring it back earlier to avoid the bad weather? Is this a problem for crew shifts?

If the weather is bad for the last few days of the mission, an early return to DFRC might be considered, especially if there are Pacific storms to consider. This could mean splitting the ground crew. Is this possible?

Dry run did not include FIR and Country clearances. This must be considered in 2012 since some countries will say no and have to be planned around and others will require 48-72 hrs notice.

Dry run did not include coordination with other aircraft and CARCAH notification. These will need to be considered for 2012.

ACTION: Obtain actual terminal area forecasts (TAFs) for WAL and have a conversation with the pilots about how they would likely make decisions given certain unfavorable forecast conditions like those encountered during this exercise.

Have daily Wallops Forecast participation in planning meetings. Knowing the projected takeoff and landing conditions is a must. A significant number of low ceiling days was limiting flights during the dry run period. This suggests that scheduling a 5-week deployment period in 2012 might be prudent to permit observation of more storms (only if the delivery of the aircraft to WFF is staggered).

Labor. It was sufficient to schedule/assign the mission scientist and forecasters 2-3 days in advance. A complete schedule was not created at the start. In the field, mission scientists and forecasters should plan to support the deployment for a minimum of one week, with a minimum one full work day overlap with their replacement(s). The complete schedule will be created and distributed prior to deployment to enable travel reservations. If the hotel room block will close in March, this must be done by Feb. Three shifts of scientists (mission scientists and instrument PIs) will be needed throughout the experiment in order to accomplish the number of flights that we want. Switching back and forth between night and day schedules will wear people out quickly. Not clear if we need three shifts of forecasters since once in flight, not as much need for forecasters during the middle of the night.

Exercise strategic use of hard down days. When there is no current target but an upcoming period of meteorological interest, resetting the clock can be prudent. One can fly earliest 2 days after a hard down (preflight on next day). Need to clarify deployment rules (still 10 days but Sunday not a factor as it is at DFRC?)

Tools

Summary of Flight Rules worked well. The summary of flight rules and limitations (GH parameters) was very useful. The country clearance limitations should be added to it for 2012. The aircraft communication document will aid pilots with coordination.

Webex worked well. Had to share the password with a few key people to ensure there was someone available to start the meeting every day. No problems passing the host or presenter functions to participants. Conversation through the meet-me line worked well.

The flight planning spreadsheet was a good visual tool for flight planning, in addition to all the forecasting web sites.

Did Leslie Lait get the updated GH parameters for the flight planning tool?

Sharing the images of planned flight routes was somewhat limited. PNG files were emailed or posted to COMPASS. For actual flights we want to bring these into COMPASS, and for that they must be on a public web site. Aaron did this for us but it would be nice to be able to bring in the KML files independent of Aaron.

COMPASS was an adequate document repository. Forecaster reports were submitted for each day of the dry run. A few days are lacking a mission science report. Mission science reports in 2012 will be posted on the ESPO website.

Emergency/Evacuation Conditions

Wallops has clearly defined evacuation criteria for aircraft in their evacuation plan. It is not clear whether DFRC has its own, separate criteria for evacuation. This topic came up when Irene approached WFF, and it will be discussed during the site visit to WFF in December 2011.