

Updating GH Track & Dropsonde Positions to NASA's MTS

Quick Overview

- a) Run tkmap track software >> create a waypoints and dropsonde file
 - Be sure to include Update # in the header of current1.ftk (e.g. *Update #1*)
- b) Alert GH mission director >> track update is being prepared
- c) Prepare an email to: noaa.shout.flight.plan@noaa.gov (see Step 3 below)
 - Add a CC to: noaa.shout.mission.science@noaa.gov
- d) FTP waypoints and dropsonde files to the HRD anonymous FTP server (see Step 4 below)
 - For GH Plan 1:
 - put turns1.txt n872_turns_active_1.txt
 - put drops1.txt n872_drops_active_1.txt
 - For GH Plan 2:
 - put turns1.txt n872_turns_active_2.txt
 - put drops1.txt n872_drops_active_2.txt
- e) When the updated track appears on NASA's MTS:
 - Send email update that was prepared in *Step "c"*
 - Alert GH mission director that the GH track has been updated in MTS & emailed
 - tkmap directory >> copy current1.ftk to current1.ftk.update# (e.g. *update1*)

Detailed Overview

- 1) Generate track files using HRD's tkmap software
 - Update the storm name at the top of current1.ftk to reflect the update # e.g. *ERIKA UPDATE 1*
 - Output files include:
 - track image: ftk.png
 - waypoints file: turns1.txt
 - dropsonde file: drops1.txt
 - turns1.txt & drops1.txt will be FTPed to HRD server (see step 4)
- 2) Give the GH mission director a heads-up that an updated GH track is being prepared
- 3) Prepare an email to: noaa.shout.flight.plan@noaa.gov
 - Add a CC to: noaa.shout.mission.science@noaa.gov
 - Keep track of the update numbers and check that the latest track in current1.ftk includes the current update number being worked up.
 - Note that you should always use GH Plan 1 (or 2) "Active" for track and dropsonde updates made during the mission.
 - DO NOT SEND until reaching Step 8
 - Sample email to noaa.shout.enrr.flightplanning@noaa.gov is below (for GH Plan 1):

Subject: *Update #1: flight plan for SHOUT mission YYYYMMDDGH*

Update 1 to the flight plan has been uploaded to MTS under GH Plan 1 (Active track).

Changes: added a final S-N leg to the lawnmower that begins at WP 20 (drop point 40i).

1) Flight plan waypoints:

http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_active_1.txt

2) Flight plan dropsonde points:

http://compass-ds-registry.s3.amazonaws.com/_shout/n872_drops_active_1.txt

- 4) FTP turns1.txt & drops1.txt to the HRD ftp server using naming convention below:
- ftp <ftp.aoml.noaa.gov>
 - user: anonymous; password: your email
 - cd incoming/hrd/dunion/shout/
 - For GH Plan 1
 - put turns1.txt n872_turns_active_1.txt
 - put drops1.txt n872_drops_active_1.txt
 - For GH Plan 2
 - put turns1.txt n872_turns_active_2.txt
 - put drops1.txt n872_drops_active_2.txt
 - Note: turns and drops files generated by TKMAP always end in “1.txt”
 - Note: the n872 turns and drops files that are placed on the HRD ftp server will either end in a “1” or a “2” depending on which GH Plan is being used for the mission (this # will not change during the mission)
 - Note: GH Plan 1 (or2) “Planned” will be the pre take-off planned track & will not change during the mission
 - Note: GH Plan 1 (or2) “Active” will be the active track during the mission and will be updated as needed throughout the flight
 - Note: for a list of valid aircraft turn & drop file names, see:
<ftp://ftp.aoml.noaa.gov/pub/hrd/dunion/mts/README.txt>
- 5) Files will be automatically moved over to the HRD public directory every few minutes and can be viewed at:
- <ftp://ftp.aoml.noaa.gov/pub/hrd/dunion/mts/>
 - MSs should keep a web page with this link open during the mission
 - Note: see README file in this directory for more info
- 6) NASA’s MTS program will automatically pick up the new track files from the above directory every few min.
- The new GH track can be found on MTS at: Bundles >> SHOUT Products >> Planned Flight Tracks >> Global Hawk (NASA872) Plan 1 (or 2) >> Active
 - Before sending the email to noaa.shout.flight.plan@noaa.gov and alerting the mission director of the track update, check to be sure that MTS has picked up the new track;
 - Note: if there is a delay of more than 7-10-min from the time the updated track appears on HRD’s FTP pub directory, contact Aaron Duley at NASA AMES: aaron.r.duley@nasa.gov and Jason Dunion at NOAA HRD: jason.dunion@noaa.gov (305-720-3060)
- 7) Pilot-friendly versions of the track and dropsonde points for importing into their FalconView software are available as soon as the new track appears in MTS and can be found at the static links listed below:

MTS GH Plan 1:

- *Notional*: T= -48-hr GH operating box that the pilots pre-cleared with ATC (does not include a drops files (only the track is submitted to the pilots)
- *Planned*: track & dropsonde points that were generated before take-off (these points will not change after take-off)
- *Active*: track & dropsonde points that will be updated during the mission
- Waypoints:
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_notional_1.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_planned_1.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_active_1.txt

- GPS dropsonde points:
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_drops_planned_2.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_drops_active_2.txt

MTS GH Plan 2:

- Same as MTS GH Plan 1, except links have “_2.txt”
- Waypoints:
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_notional_2.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_planned_2.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_turns_active_2.txt
- GPS dropsonde points:
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_drops_planned_2.txt
http://compass-ds-registry.s3.amazonaws.com/_shout/n872_drops_active_2.txt

Note: make sure these links reflect new track updates before alerting pilots that new track info is ready for viewing.

Note: make sure that the Update # that appears in the header of these links matches the update # that is listed in the email that is being sent to: noaa.shout.enrr.flightplanning@noaa.gov

- 8) Send the email out to noaa.shout.flight.plan@noaa.gov and alert the mission director that the update now appears in MTS and that an email was sent to the SHOUT flight plan list serve.
 - Copy current1.ftk to current1.ftk.update# (e.g. *update1*) on the MS laptop for bookkeeping

Tips for making track changes

- Try not to change upcoming waypoints that are <30-min away from the GH. The pilots usually need at least 30-min to clear track changes with ATC.
- Add a 30-min GH range ring in MTS: this will display a 30-min circle around the GH and is useful for monitoring the 30-min “heads up radius” around the plane. Note that the range ring is dynamic and varies depending on the current GH speed.
- In order to avoid confusion, never change waypoints or drop points that have already been flown.
- SHOUT will use MTS GH Plan X “planned” track for the pre take-off planned flight track (this track will remain static after take-off)
- If the GH track needs updating during the mission, contact the mission director to let him/her know that a change will be coming to GH Plan X “active” track and at which waypoint (& drop point) those changes will take effect.
- SHOUT MSs will make updates to GH Plan X “active” track throughout the mission.

Situational awareness

- GH pilots use the waypoints links listed in Step 7, as well as the dropsonde IDs that appear on MTS for situational awareness.
- Mission directors rely heavily on dropsonde IDs that appear on MTS for their situational awareness.
- SHOUT mission scientists should be aware of both FalconView waypoints and MTS dropsonde points while communicating with the pilots and mission directors.
- During the 1 hr shift overlap, MSs should have a short meeting that includes all members of the 2 shifts to brief the incoming shift on the current status of the missions. The outgoing shift should give the active current1.ftk to the next shift before rotating out.