

Status of TODWL and GWOLF

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SWA

January 2006

Airborne Doppler Wind Lidar

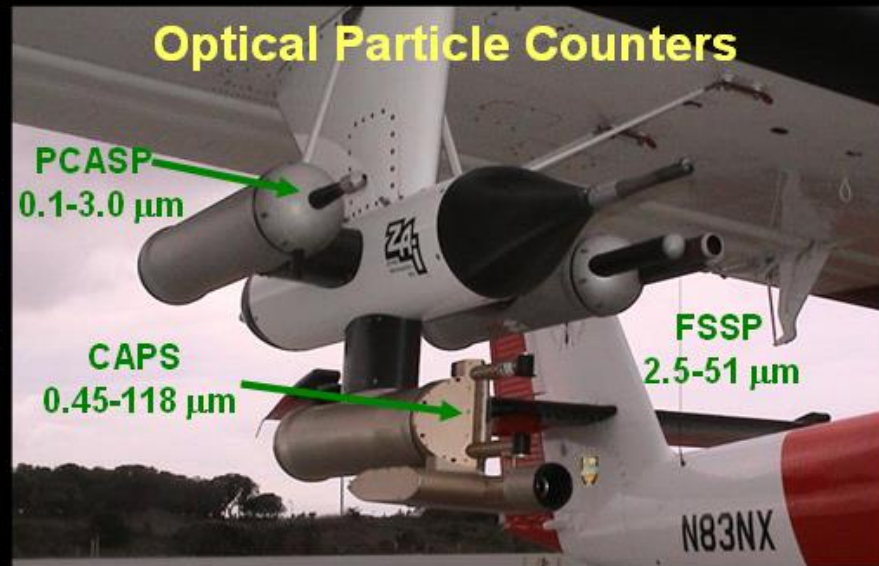
Aircraft Platform



NPS CIRPAS Twin Otter

Naval Postgraduate School
Center for Interdisciplinary Remotely-piloted Aircraft Studies

Optical Particle Counters



TODWL Instrument

2.0125 μm , coherent detection

2 mJ, 330 nsec, 500 Hz

10 cm telescope

two axis scanner, $\pm 30^\circ$ & $\pm 120^\circ$ deg, side door mount

Digitization rate 500 MHz

~7-10% total system efficiency

TODWL Scanner



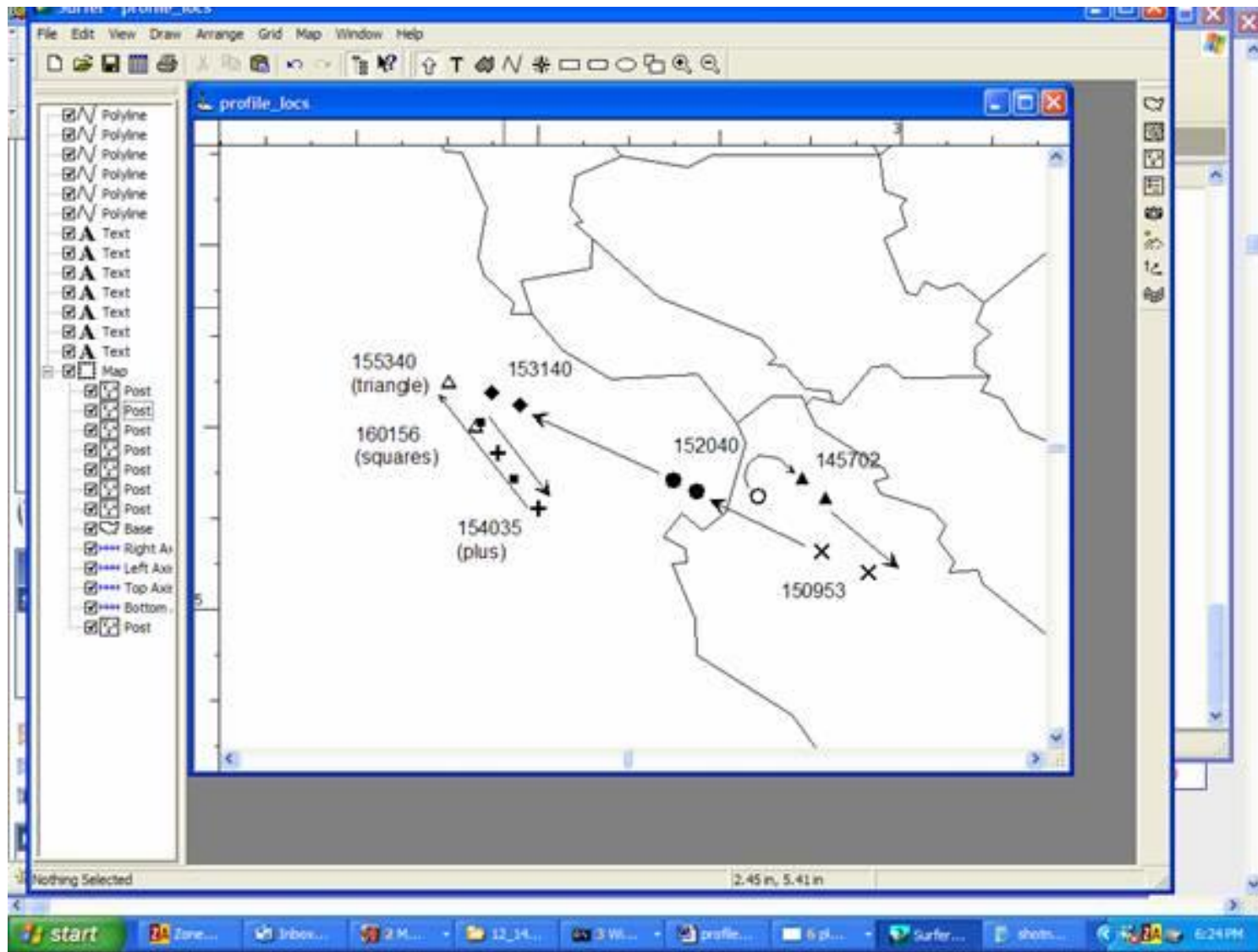
TODWL

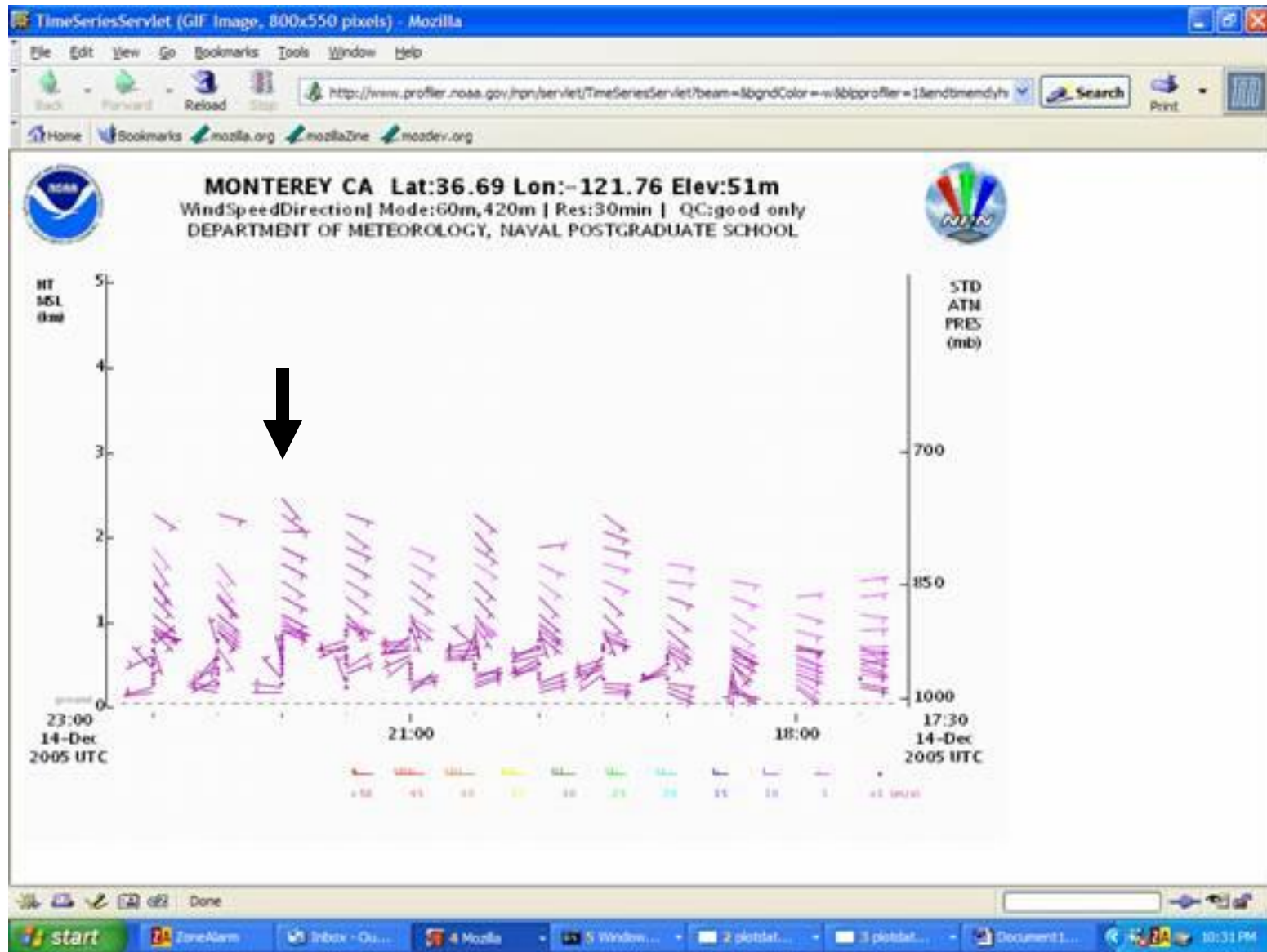
- New system installed 9 December 2005
- Checkout flights 14,15 &16 December 2005
- Ready for missions. However, installation configuration to be changed to use less real estate so that the DWL can co-fly with other experiments

Checkout Flight Objectives

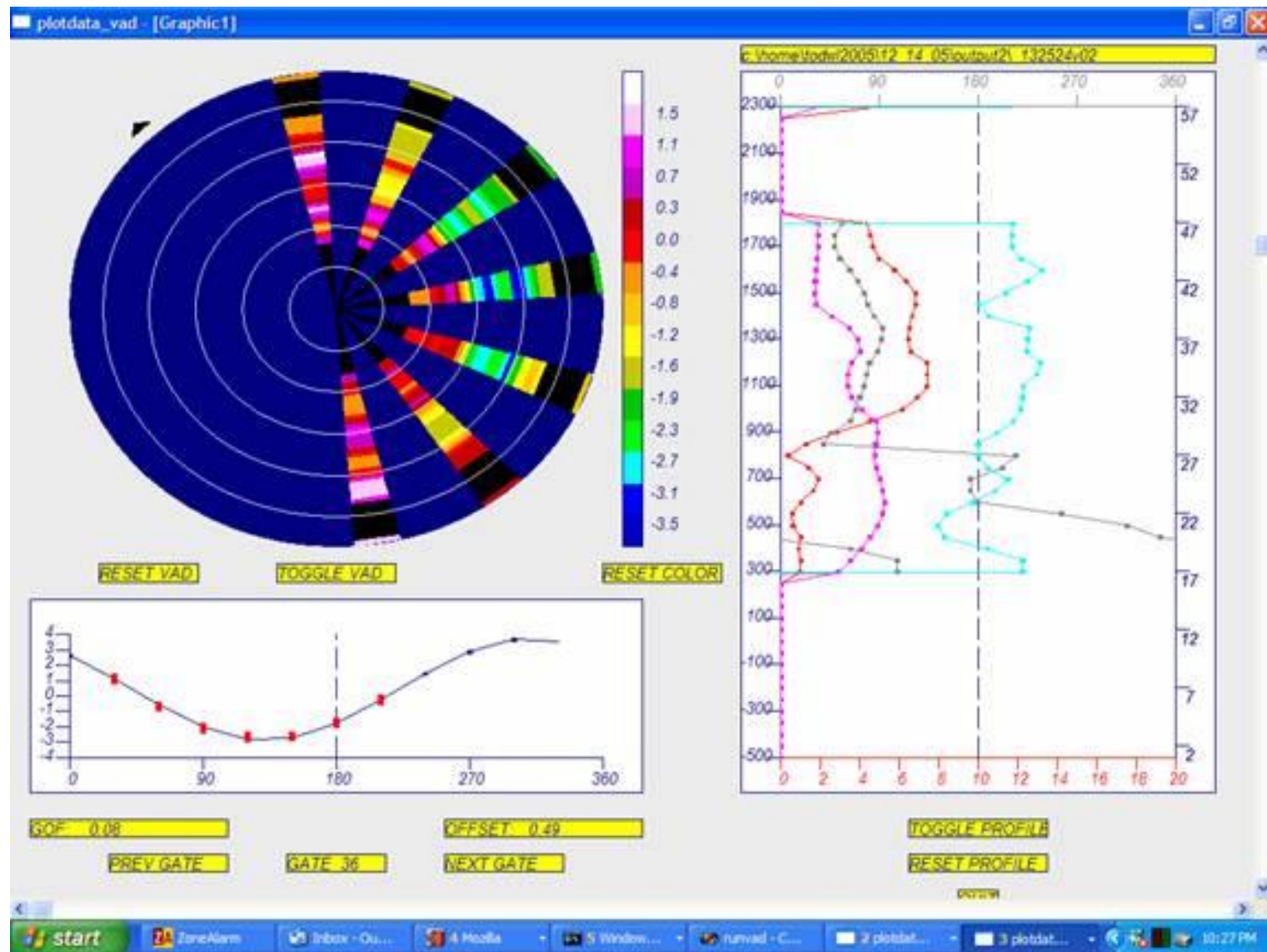
- Hardware performance checkout (OK)
- Evaluate new “complex terrain” scan pattern
- Underfly Quiksact and/or WindSat
- Collect new series of profiles over the ridge/valleys near Monterey, CA

Flight Path on 14 Dec 2005





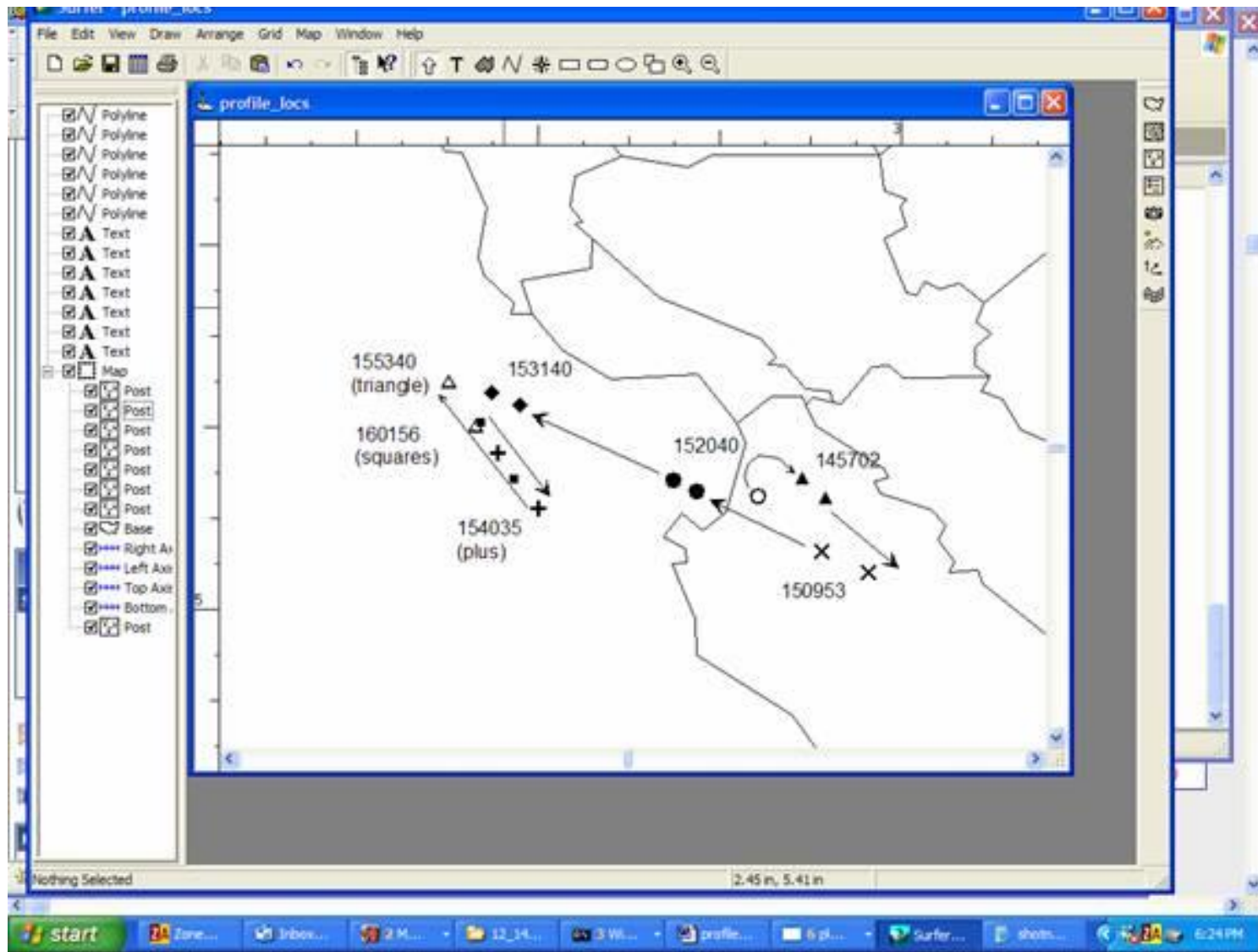
1325 PST Dec 14 2005



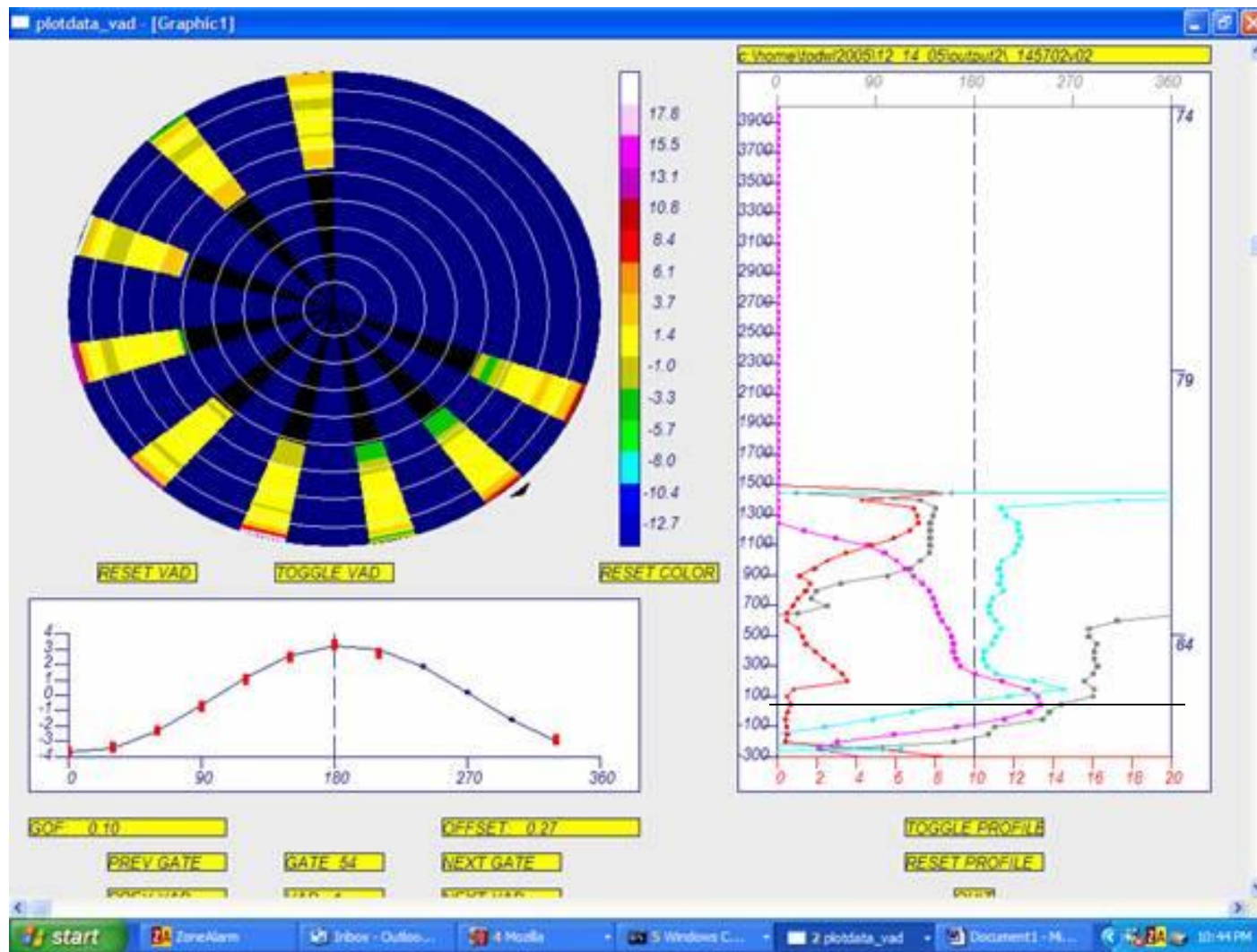
Grey: WD

Red: WS

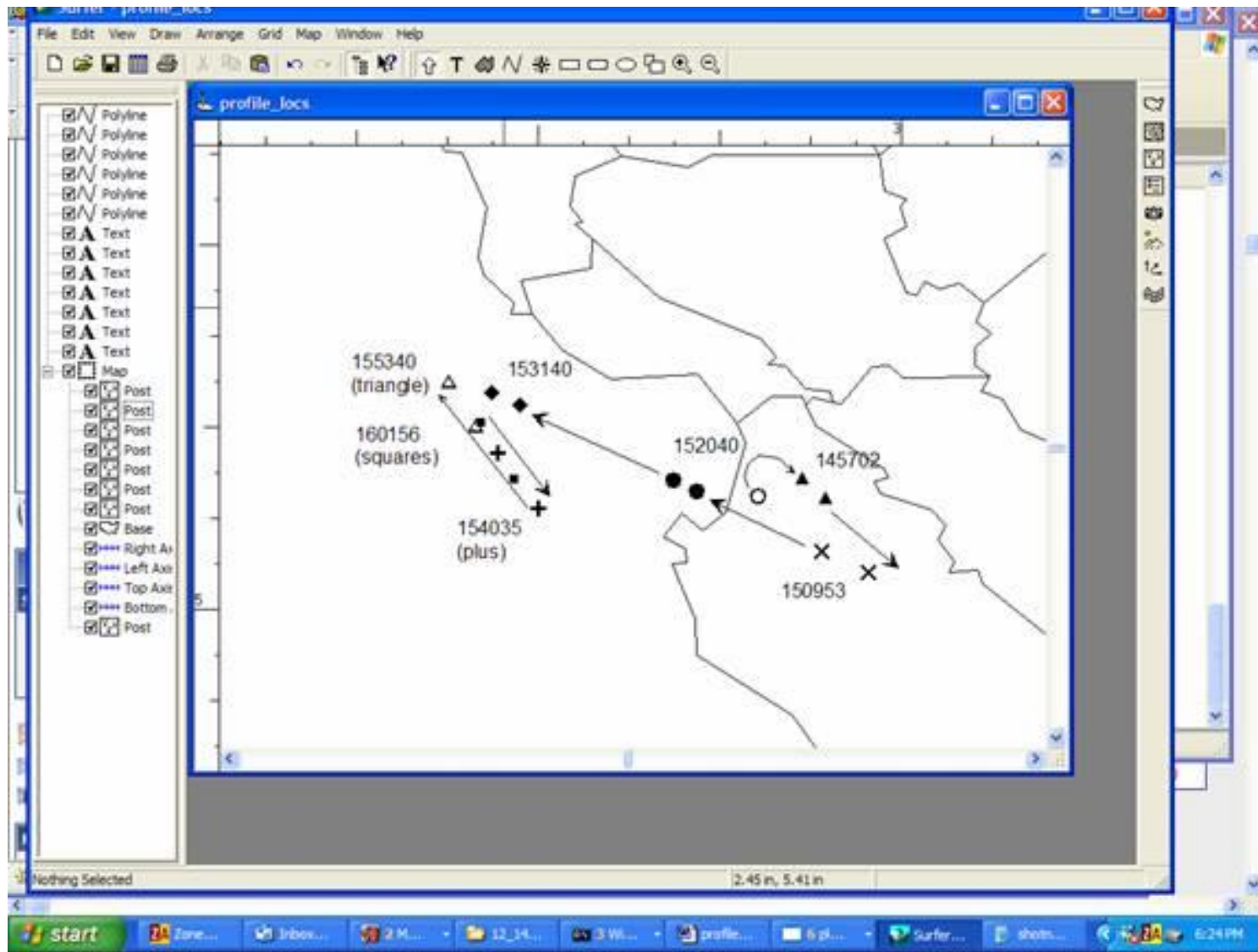
Flight Path on 14 Dec 2005



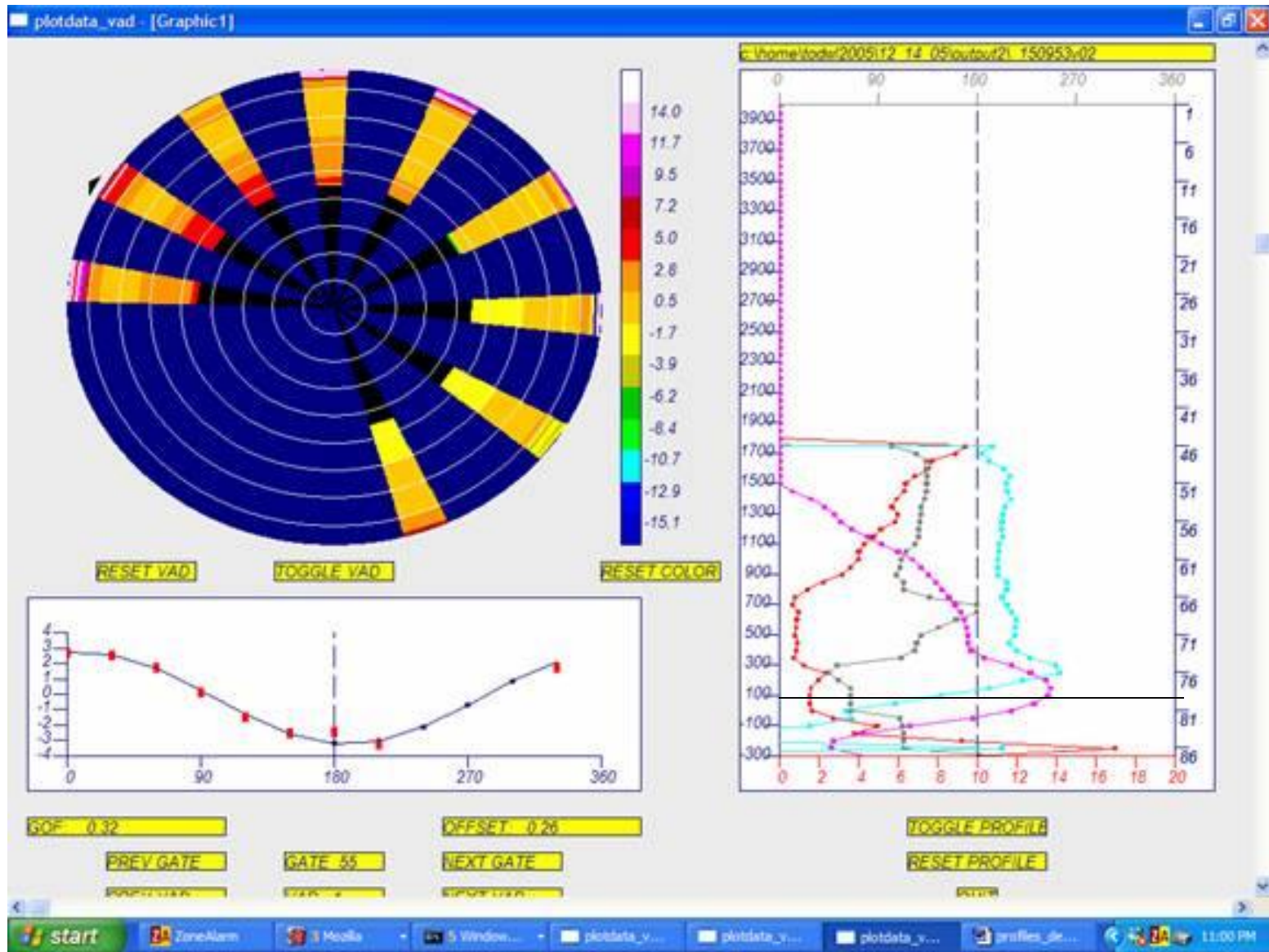
1457 Dec 14 2005



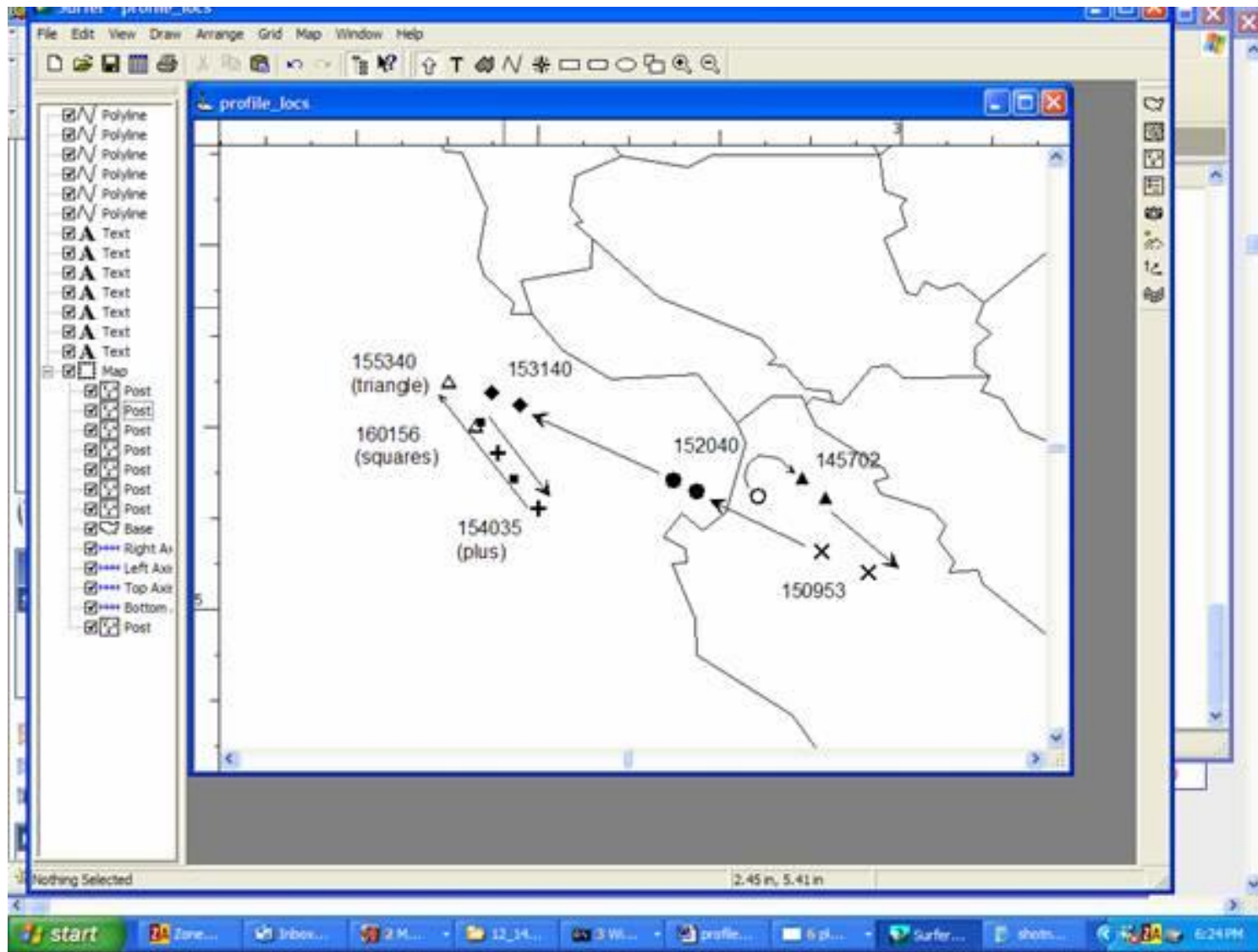
Flight Path on 14 Dec 2005



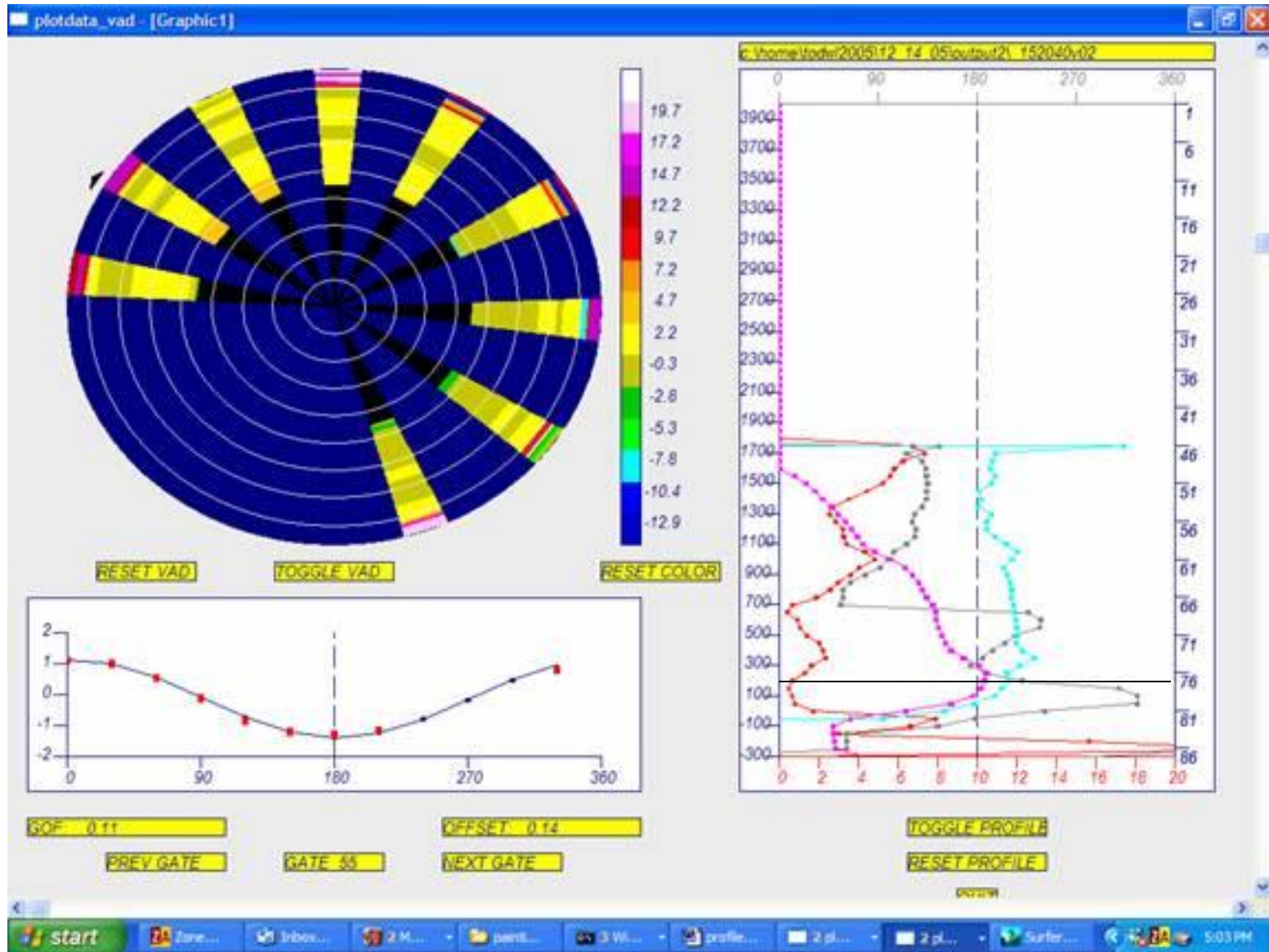
1509 Dec 14 2005



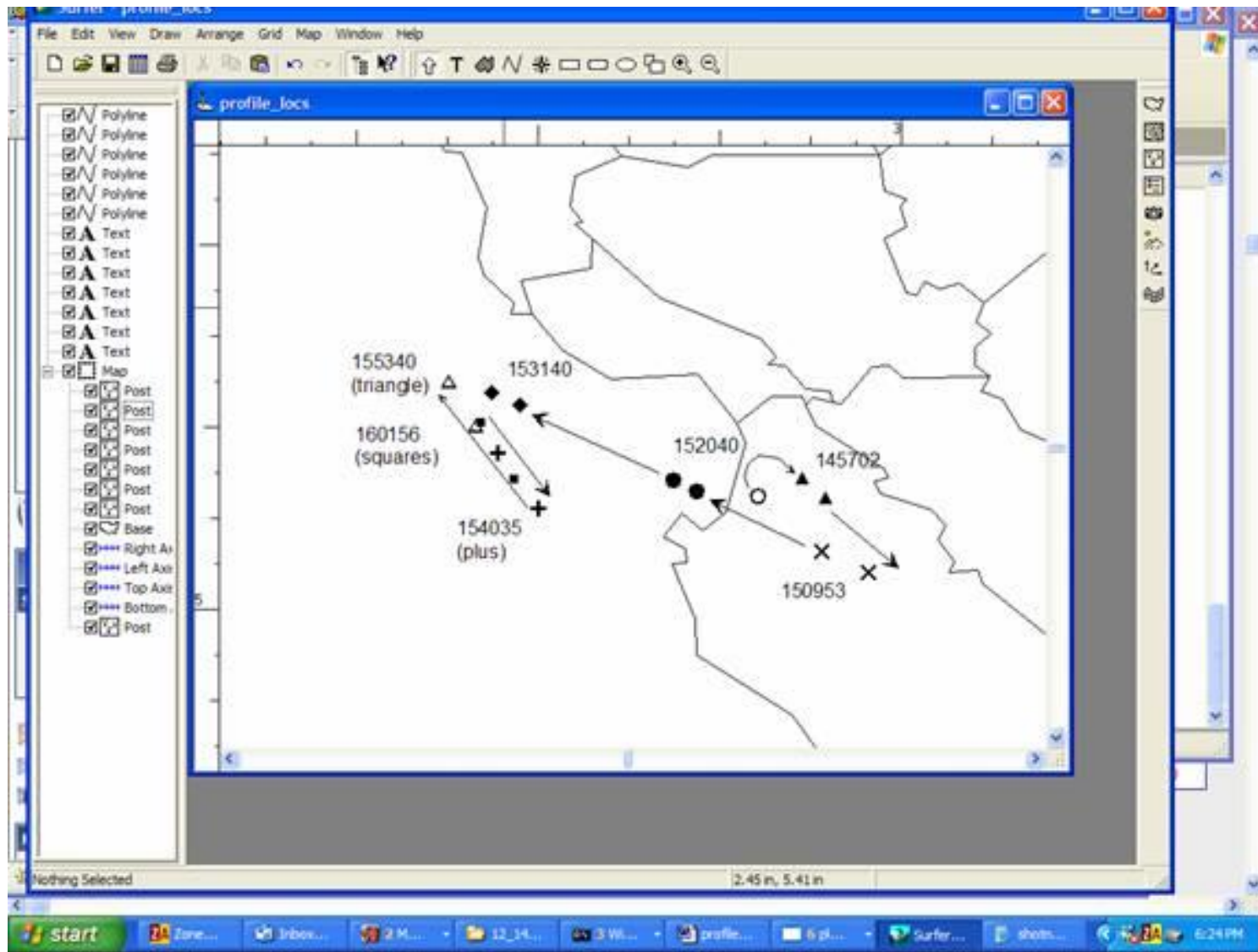
Flight Path on 14 Dec 2005



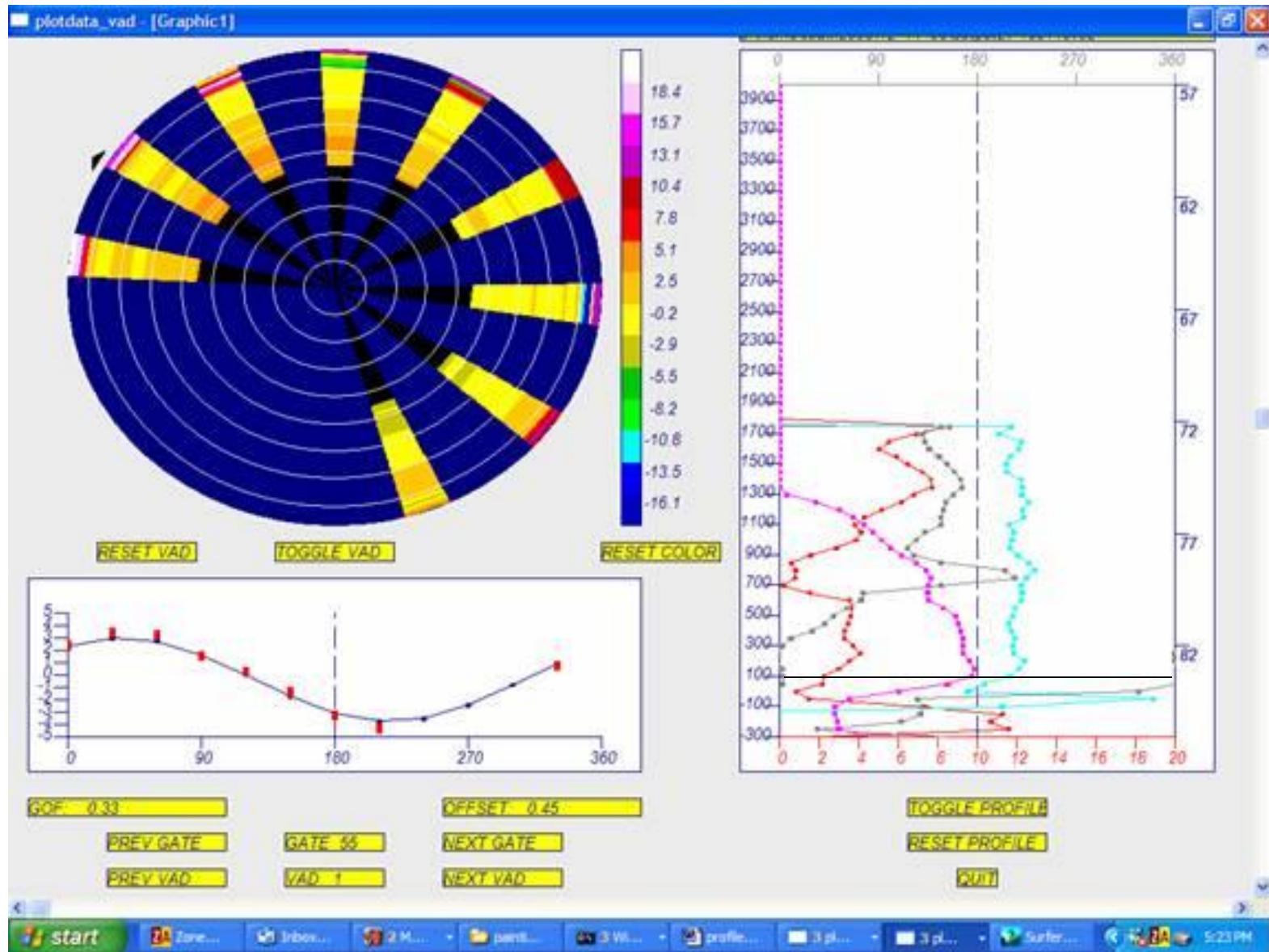
1520 Dec 14 2005



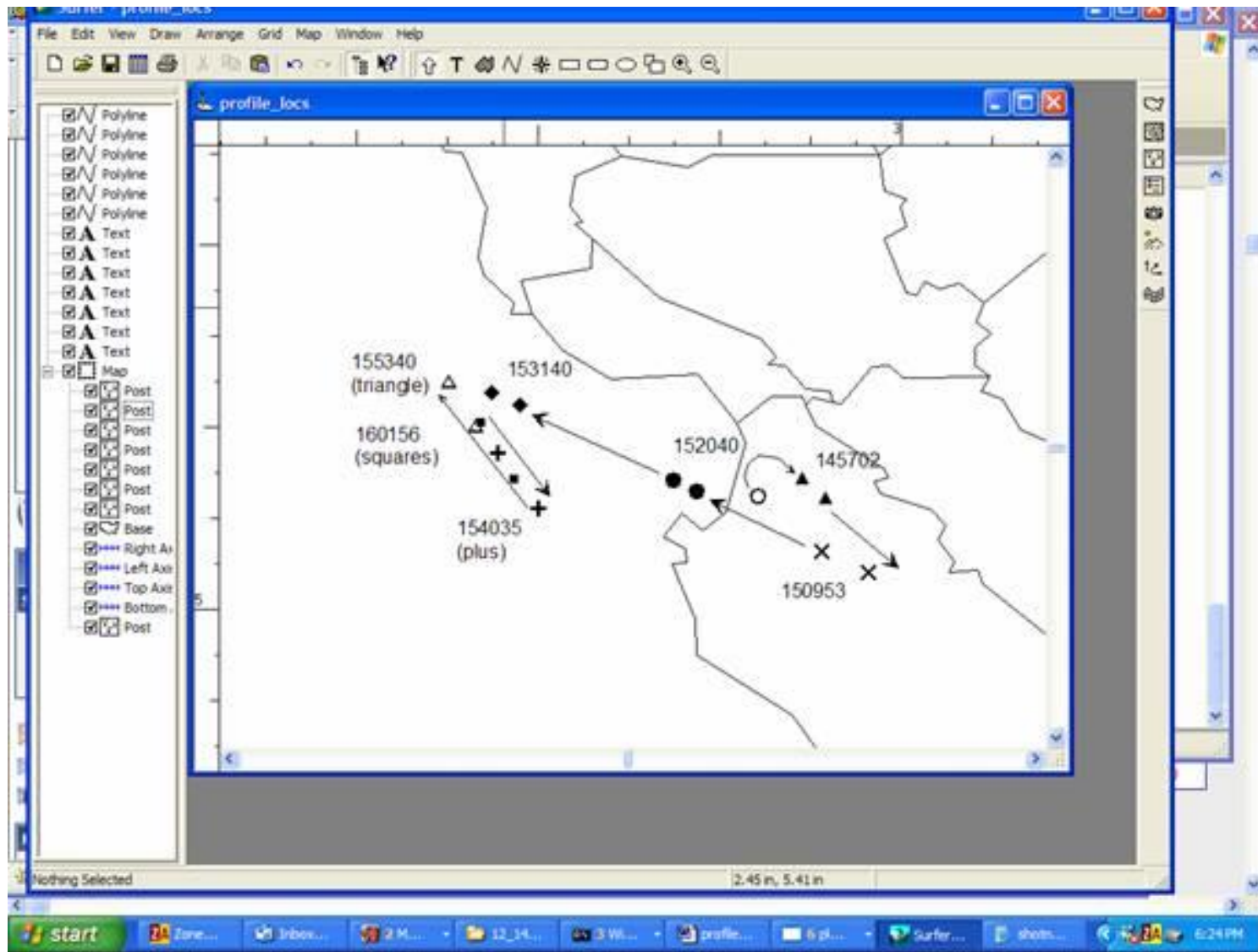
Flight Path on 14 Dec 2005



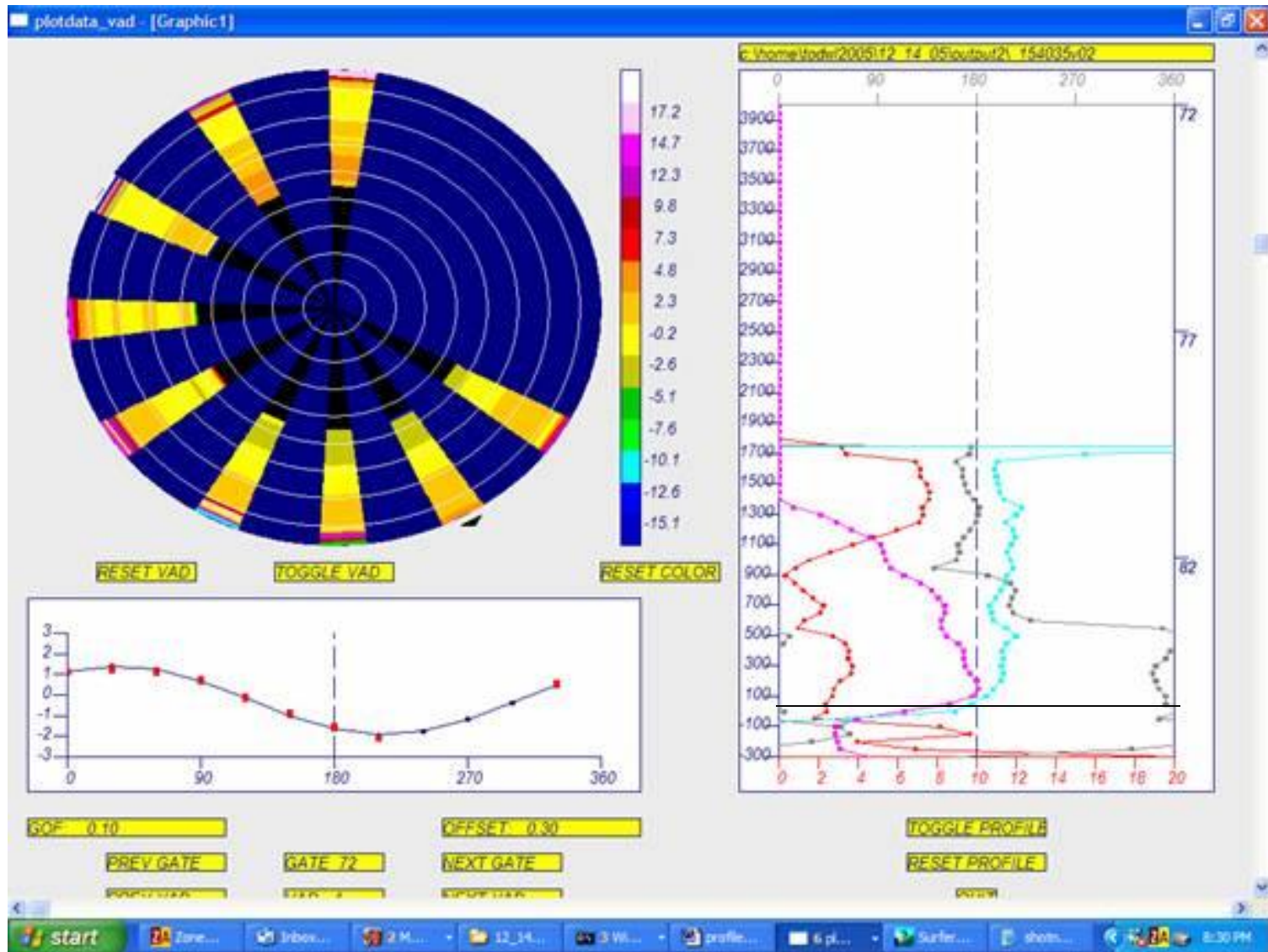
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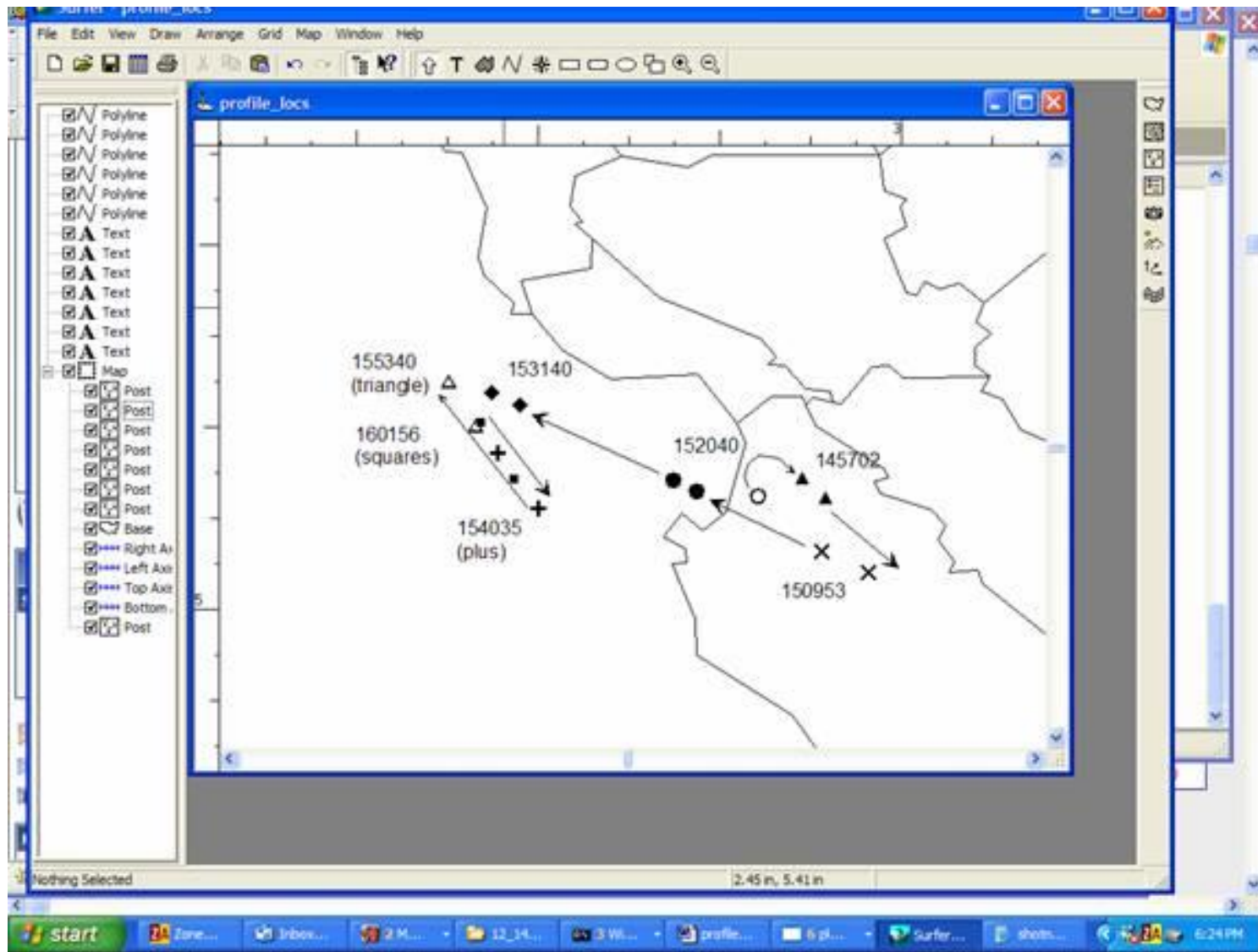
Flight Path on 14 Dec 2005



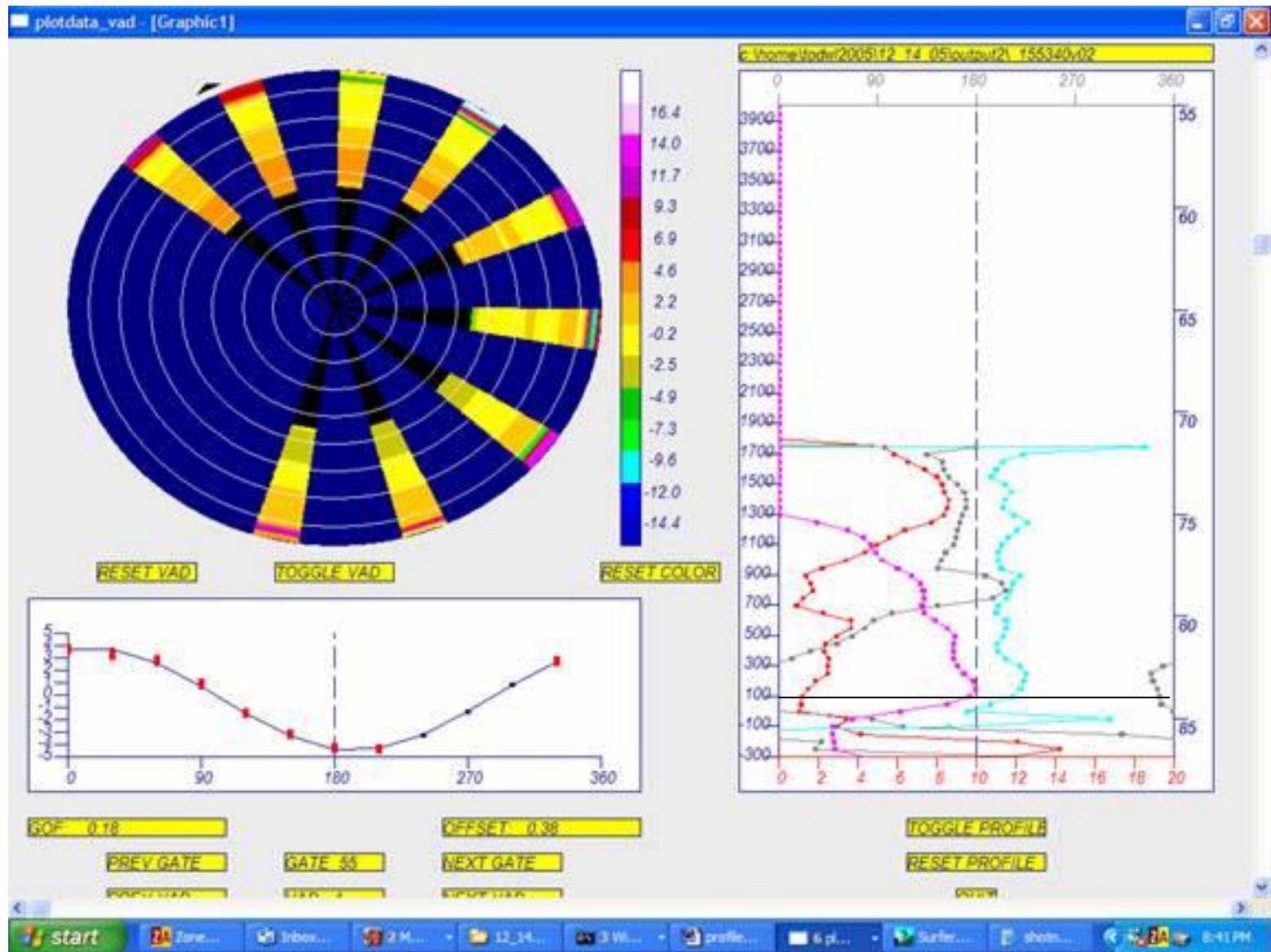
1540 Dec 14 2005



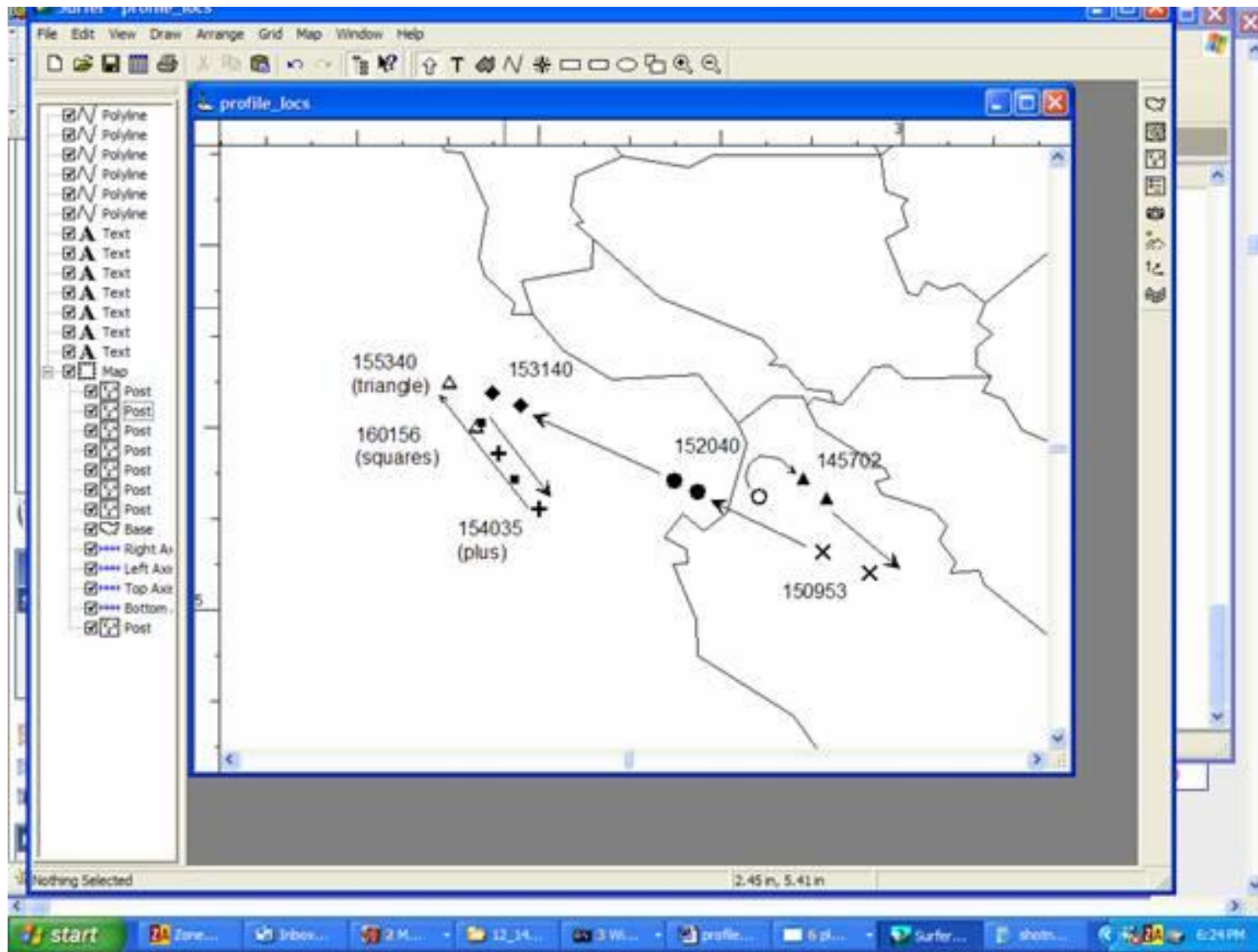
Flight Path on 14 Dec 2005



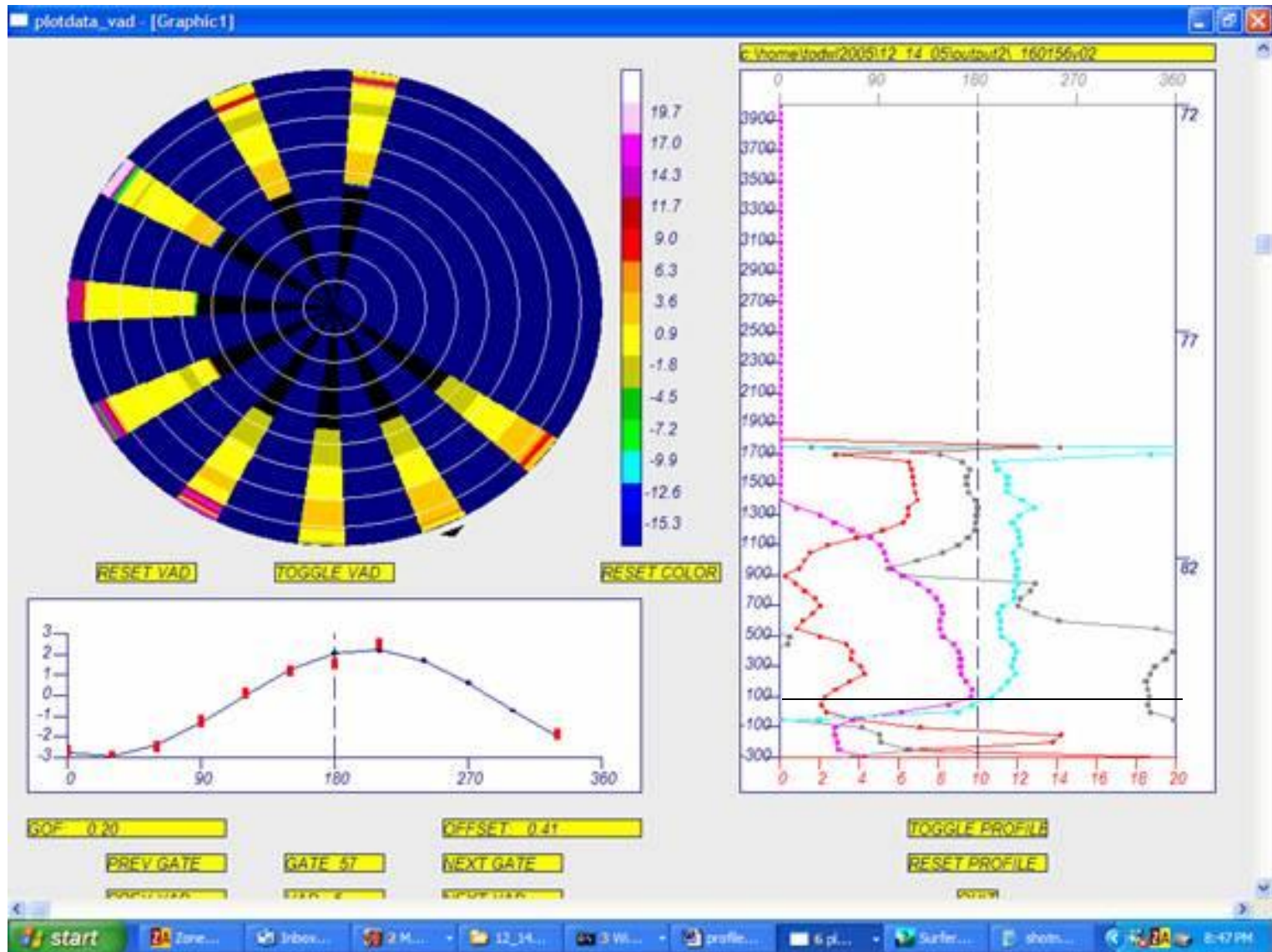
1553 Dec 14 2005



Flight Path on 14 Dec 2005

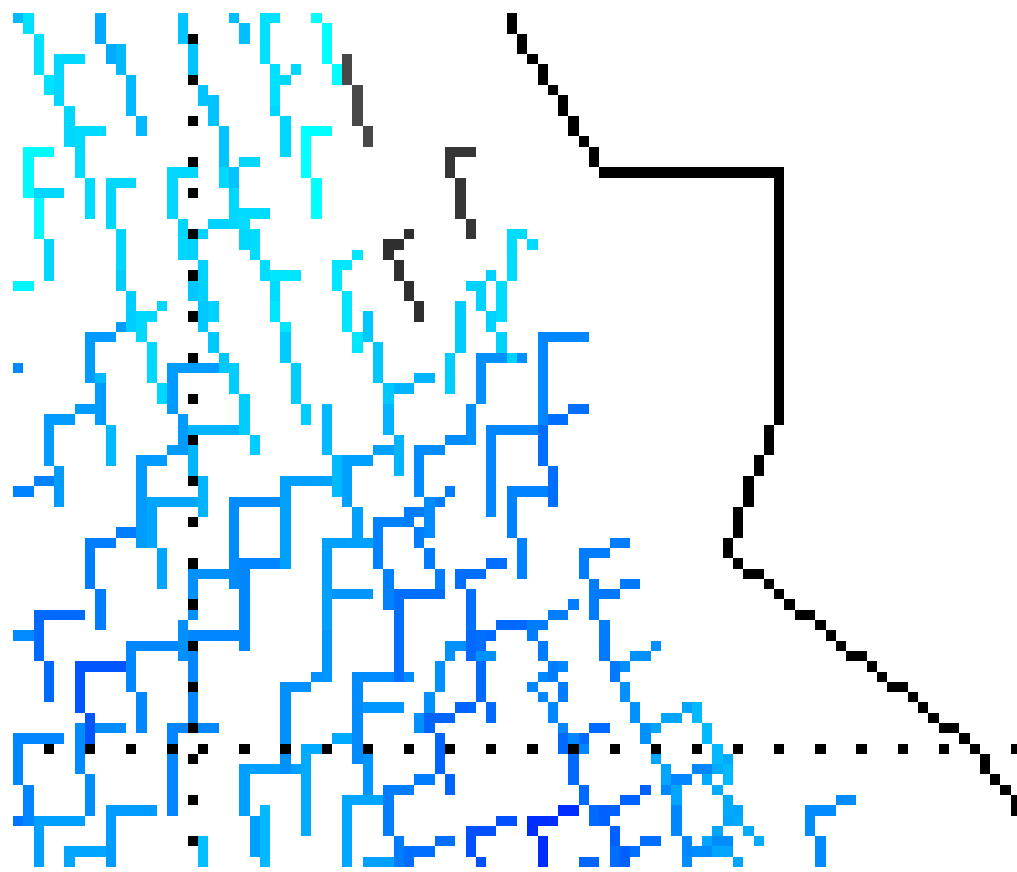


1602 Dec 14 2005



QUIKSCAT NRT HIRES Dec 15 02:03 UTC 2005 ascending

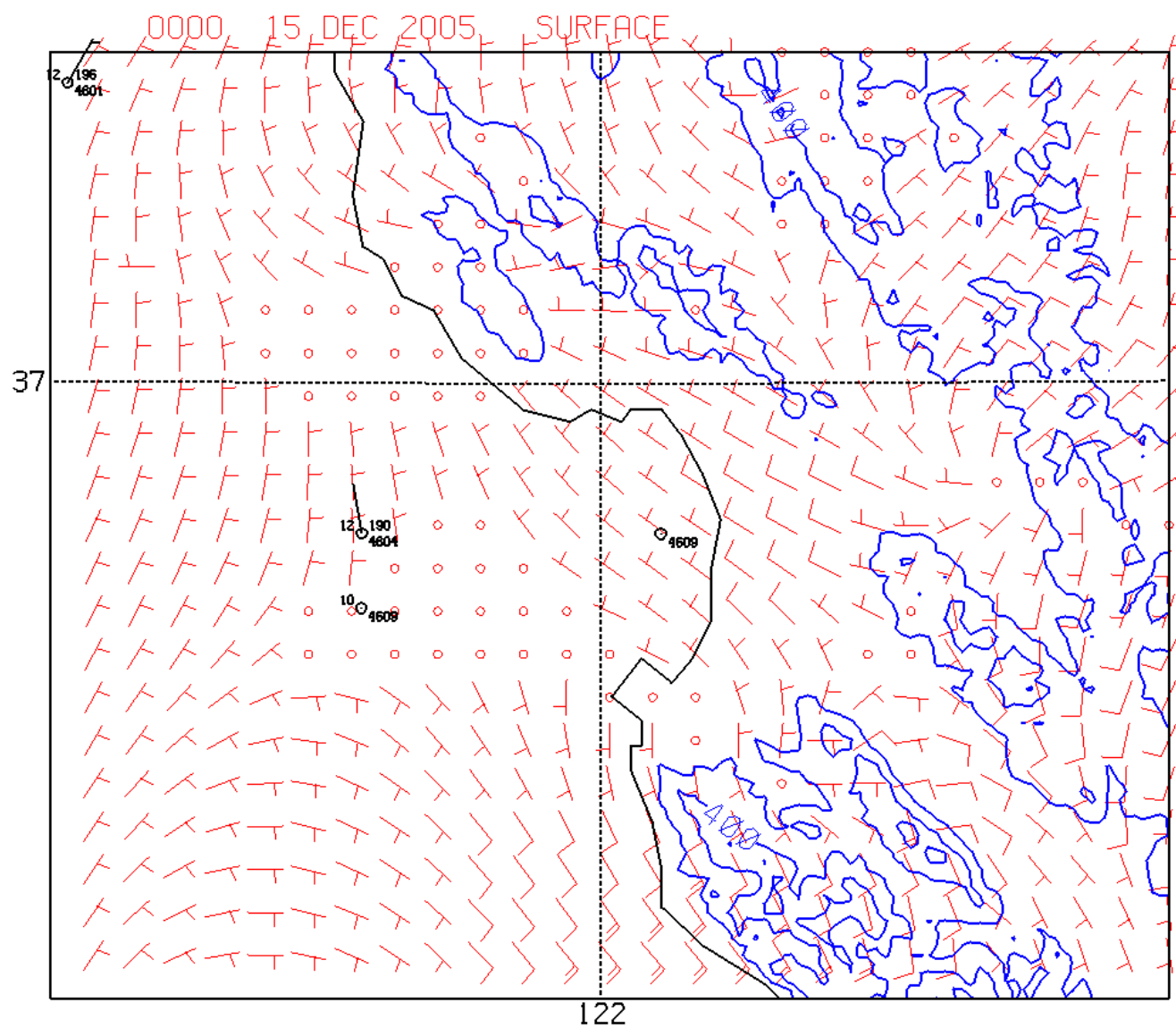
0 5 10 15 20 25 30 35 40 45 >50 knots



Monterey Buoy 46042

Date	Time (PST)	WS (kts)	WD
12/14/06	2:50	3.9	N
12/14/06	3:50	3.9	N
12/14/06	4:50	3.9	NNW

MM5 00Z Analyses



GWOLF

- NASA provided hemispherical scanner for installation on top of GWOLF trailer.
- Scanner installed in December
- Racks and internal hardware need to be fabricated and installed (finish expected March 15)



VALIDAR & GWOLF at the Lidar Intercomparison Facility



Location
Of
Target
Lights
Bldg 1297
R-B-Y-G



Observation Plan for GWOLF

- Co-operate with LaRC's VALIDAR and GSFC's GLOW at LaRC's Lidar Intercomparison Facility.
- Conduct random set of observations designed to generate a distribution of vertical performance throughout all seasons (in Virginia).
- Participate in NSF funded experiment in Arizona to study desert dust redistribution within sparsely vegetated regions.
- Planning to participate in proposed plume studies at Redstone Arsenal
- Co-operate next to CIRPAS radar in a tornado study in 07.