Gordon Bennett 54th Race 25.09-02.10.2010

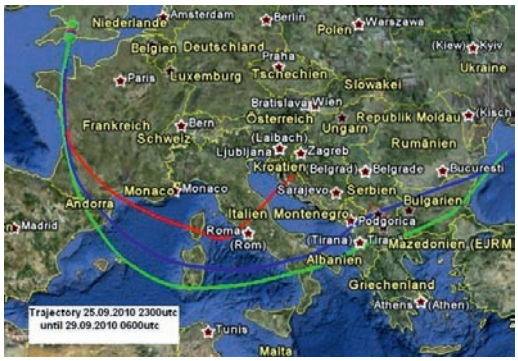
Meteorological assistance for the French team

First race in Paris in 1906

The Gordon Bennett Cup is the world's oldest and most prestigious gas balloon race. The first competition started in Paris on September 30th 1906. The event was sponsored by James Gordon Bennett Jr., millionaire, sportsman and owner of the New York Herald newspaper.

The rule is simply to fly as far away from the launch site as possible. The contest was organized almost every year before World War II except during World War I. The resurrection of the race took place in Paris in 1983 starting from the "Tuileries Garden". The winner travelled a distance of 690 km. In 2010 the race started from Bristol, United Kingdom.

As this 54th Gordon Bennett race started from England, it was important to have a wind direction not going towards the open ocean. Fortunately the starting period 25.09-02.10.2010 was well-chosen and a northwesterly wind was forecast with a tendency to turn westerly during the flight window. For the race, the 'Maximum distance' therefore meant the greatest distance from Bristol towards eastern Europe in a contest area limited by the organizers. After take-off a northerly wind brought the competitors southwards in the direction of Bordeaux in France.



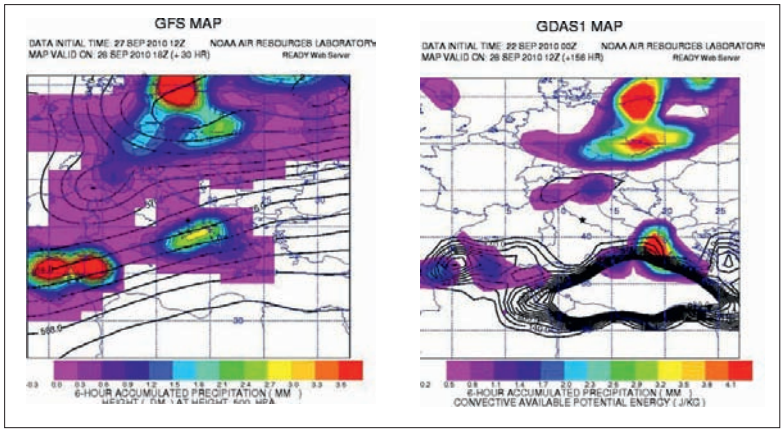
▲ *Trajectories at different levels from 25.02.2010 until 29.02.2010*

▼ *Balloons on the launch day (source http://www.gordonbennett2010.com/gallery)*

The French team – with headquarters in Nancy and comprising four persons - proposed to take a more southerly track to avoid the "Tramontane" wind east of Toulouse. For safety reasons in case of an emergency landing, the pilots wished to avoid strong surface winds with a speed of locally more than 20G30kts generated by the blocking of the Pyrenees.

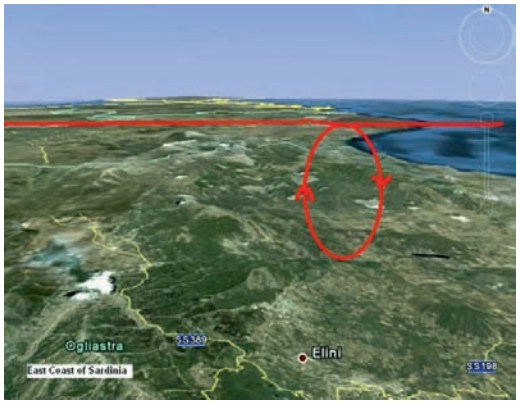
Balloon FR 1 landed in safe conditions in northern Spain after 1122km. The landing took place on the 27th at around 0800hrs with no more than 5 kts and few clouds. The crossing of the Mediterranean Sea was not scheduled with that balloon.

Balloon FR2 crossed the Pyrenees as well, in the direction of Sardinia. Then the intention was to cross Italy and if possible reach the Bulgarian Black Sea coast. It was very important to avoid the large unstable area extending from Tunisia towards Albania and Greece. On the other hand a certain amount of instability was forecast for northern Italy. The idea was to navigate in between these two unstable areas with the possibility of landing at the Bulgarian coast. The option of flying to the Greek Peleponnese (the greatest possible distance) was rapidly abandoned due to unstable weather conditions in the whole southern part of the Mediterranean Sea.

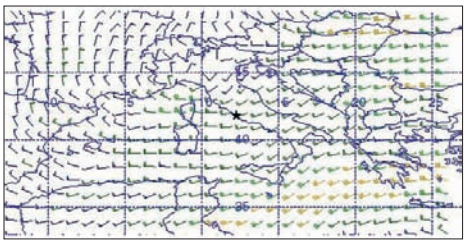


156 hours forecast of precipitation and cape from GFS model (run 22.09.2010 12 UTC)

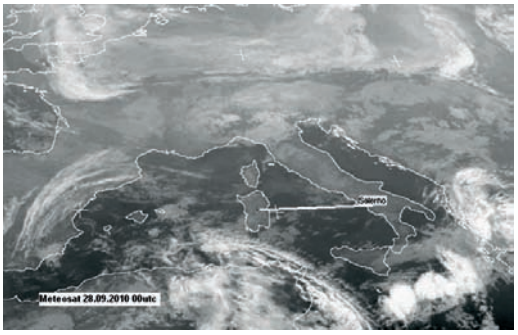
The wind speed forecast for the 28th was around 20-30kts at an altitude of 3000m in the direction of Sardinia and Italy. Italian air traffic regulations do not permit VFR flights to cross land areas during the night. So the tactic of the coordination team was to arrive at the Sardinian coast at noon crossing Sardinia in the afternoon, and to reach Italy on the morning of the 28th, after that crossing the Italian territory during the day. During the 27th of September thunderstorm activity in the whole south Mediterranean was increasing and extending to Sicily and Calabria. To avoid the forecast thunderstorm activity between Bari and Tirana (Albania) it was planned to use the southwesterly winds at 3000m over Italy. While crossing Sardinia the western part of the mountain range has an altitude of about 4000-5000ft. A cruising altitude between 7000 and 9000 ft seemed to be sufficient to avoid the turbulence created on the lee side of the mountain range. But suddenly, after having crossed the mountains, the balloon came into the downdraft of a lee rotor. The altitude of the balloon decreased rapidly down to only 500ft and the balloon began moving in a westerly direction. To get the cruising altitude back, the pilots had to jettison 30-40kg of sand, hoping not to waste too much time to get back to about 8000ft to reach the 25kts wind. It was vital to get out of the Italian territory before sunset. After some long minutes the GPS tracker information from inside the balloon arrived at the Bristol headquarters. The news was good, and there had been only five minutes left before disqualification.

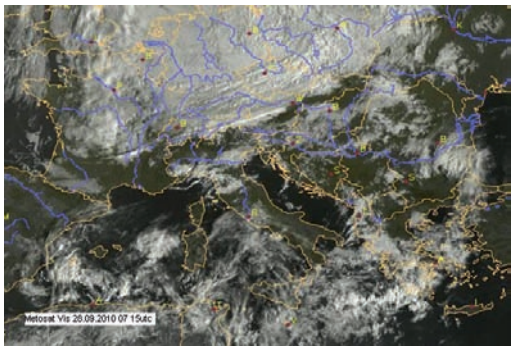


3D image of Sardinia with position of a rotor on the east coast



Wind at 3000 m - 28.09.2010 - 12 UTC

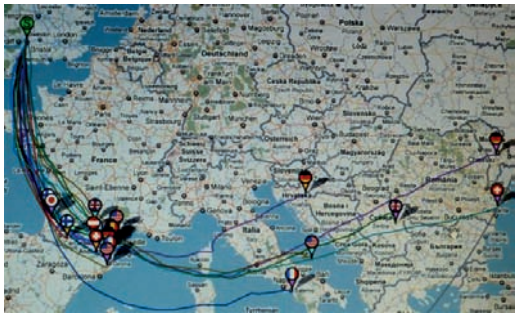




◀ *IR and VIS images from Meteosat on 28.09.2010*

During the following night, the sky was cloudy and temporarily overcast with some occasional light rain. The balloon had to go low to use lower wind speeds in order avoid reaching the Italian coast before the legal time in the morning. The pilots therefore did not have the option to fly at 3000m over the rain area. To compensate for the weight of the water some more ballast had to be dropped. The consequence was that future options were reduced once more; it was now impossible to reach the scheduled landing places in Bulgaria. The remaining ballast permitted flight only as far as Serbia. For security reasons (Serbia has not cleared all the landmine fields) the pilots decided to land in Italy near Salerno on the 28th after a distance of 1805 km from the starting place. At 0700 hrs in the morning, after 55 hrs 53´ minutes, the total flight distance was 2498 km. This was far enough to achieve 4th position in the final result.

▼ *Tracks of the different balloons engaged in the race*



Conclusion

The choice of the southerly route had the advantage that the greatest distance was possible over northern Albania to the south easterly Bulgarian border.

The gas balloon is extremely sensitive to convective weather. Thunderstorm activity was very intensive in the south Mediterranean Sea as well as in northern Italy. Stronger convection was forecast over Serbia after the 29th of September. On the other hand the ballast necessary for flying the distance to the Black Sea had been used to compensate the rotor over Sardinia.

The trajectory forecast using the HYSPLIT model from the 25th to the 29th was very accurate. The Gordon Bennett race is one of the most challenging competitions due to the long distance a number of meteorological phenomena which may be encountered en route. The combination of air traffic rules, the flying of the balloon and the weather conditions require a maximum of competence from the pilots and the whole team on the ground.

Final results

1	SWE	Kurt Frieden Pascal Witprachtiger HB-QKF	09-25 23:08 09-28 09:45 58hr 37min	2434.31 km 87 kph — 56 kph 5302 m — 3290 km	44°35.7183'N 28°45.6217'E Constanta, RO
2	GER1	Wilhelm Eimers Ulrich Seel D-OBYN	09-25 22:56 09-29 10:10 83hr 14mn	2312.66 km 81 kph — 42 kph 4291 m — 3472 km	46°55.685'N 28°42.63'E Chişinău, MD
3	GBR3	David Hempleman-Adams Simon Carey G-CGOZ	09-25 23:36 09-29 10:07 82hr 31min	2008.90 km 65 kph — 35 kph 5126 m — 2898 km	43°49.616'N 21°50.067'E Nis, RS
4	FRA2	Sebastien Rolland Vincent Leys F-PPSE	09-25 23:15 09-28 07:08 55hr 53mn	1804.86 km 70 kph — 45 kph 5261 m — 2498 km	40.6326'N 14.8539'E Salerno, IT
5	GER2	Matthias Zenge Markus Pieper D-OWBA	09-25 23:05 09-28 14:30 63hr 25min	1530.51 km 87 kph — 38 kph 4341 m — 2397 km	45°9.63333'N 15°49.255'E Zagreb, CR
6	USA1	Mark Sullivan Cheri White N-707GH	09-25 22:34 09-27 10:25 35hr 51min	1147.72 km 56 kph — 36 kph 3785 m — 1304 km	41°52.2667'N 2°39.21667'E Giron, ES
7	FRA1	Benoit Pelard Benoît Péteté F-PALL	09-25 22:50 09-27 06:13 31hr 23mn	1121.68 km 69 kph — 40 kph 4117 m — 1255 km	42°10.44'N 2°52.05333'E Figueres, ES

Logistic Team in Nancy

Christophe Houver, coordination and communication ;
Jacques Llopis, air law regulation ;
Simon Pelard, trajectories ;
Claude Sales, meteorology.

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