

## **Advances in Soaring Weather**

Powered by SkySight.io Presented by Matthew Scutter

#### Team



Matthew Scutter Software Engineer Junior World Champion 2015 IGC Ranking: 34

Roger Veciana Meteorologist & JavaScript Engineer



Sophie Curio Sales and Marketing



Jake Brattle UK Sales Junior World Champion 2019 Finn Sleigh UK Sales Junior World Vice-Champion 2019 Aude Undersee Meteorologist IGC Feminine Ranking: #14

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- Accurate initial state quality input data
  - Satellites
  - Temperature observations
  - Land/terrain database
  - Model initialization
- Accurate modelling/parameterization of physical processes
  - Cloud formations, ice to water, water to ice, latent heat, nucleation
  - Soil absorption/heating
  - Agriculture/plant modelling
  - Appropriate selections for soaring!
- Resolution
  - Higher resolution is typically better
  - Rapidly diminishing returns <4km, sensitive to topology
  - Many parameterizations do not perform at extreme resolutions
  - Vertical resolution just as important!
  - Forecast area size

## Resolution, in more detail















#### Grid scale noise



Example of 'noise' in a model which is clearly not real.

This can be prevented with careful model configuration, but becomes increasingly difficult as resolution gets higher.

## A worked example

#### South East Australia



#### South East Australia



#### Nillahcootie Gap















## Is bigger better?

#### Guadalupe Island - as seen from the ISS



#### 250km West of Mexico

For a fixed quantity of computer resources, a forecast must balance the highest resolution across the largest area

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# computing



## The Old Way









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## User Interface / Interactivity

#### Maps Overlay



#### Maps Overlay, with airspace



#### Laptop, iPad, iPhone, Android



No app needed - website is written to scale across all devices

#### Point/Table

SkySight Wed 28 Feb + --03 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 Map Satellite Time 06:30 07:30 08:30 09:30 10:30 11:30 12:30 13:30 14:30 15:30 16:30 17:30 18:30 19:30 20:30 **Arg** High Cloud Cover Mid Cloud Cover :é: :é: :é: :::: :0: :0; Cu Clouds :0: Concepción Surface Heating Street, Thermal Strength (fpm) 0 70 170 260 340 410 470 490 510 490 440 350 210 60 0 15000 12500 Temuco 10000 Soarable Height MSL 7500 (ft) 5000 Val 2500 3934 3934 3934 4531 5177 5915 6627 7526 7812 8799 8963 8484 7461 5732 3934 Soarable Height AGL (ft) 0 0 0 600 1240 1980 2690 3590 3880 4870 5030 4550 3530 1800 0 Puerto Ma 70 60 50 8000 Sfc Temp (f) 40 Isla Grande de Chiloé 30 20 57 68° 68 68° 68 64° 61° 55 57 61 Sfc Dewpoint (f) 41° 39 34 32° 28° 27° 27° 25° 25° 27° 32° 36° 36 36 36 8kt 12kt 12kt 8kt 8kt 10kt 12kt 12kt 12kt 12kt 14kt 14kt 16kt 17kt 6kt Wind (2m AGL) 273° 248° 254° 248° 268° 270° 276° 263° 258° 255° 253° 254° 253° 251° 246° ۲ 14kt 16kt 10kt 12kt 14kt 16kt 16kt 16kt 16kt 17kt 16kt 16kt 17kt 23kt 16kt Wind at BL Top 303° 279° 257° 261° 272° 271° 275° 280° 291° 300° 293° 295° 286° 255° 241° +Comodoro Rivadavia 1016.0 1015.0 \_ Pressure (hPa) 1014.0 1013.0 1012.0 https://skysight.jo/secure/#

#### **Route Forecast**



#### SkewT Forecast



#### Windgram



#### Live GOES-16 / GOES-R / EUMETSAT with Rain



#### Wave forecasts - developed for Perlan / Dennis Tito's Records

Features developed for Perlan:

- Wave Cross sections
- Live tracking overlays
- Wave task planning



Special app made for unique requirements:

- Downloads forecasts for offline viewing
- Overlays track and position
- Loads and displays waypoints

Feedback from Dennis Tito / Morgan Sandercock: "We planned this flight on Skysight two days before and the plan worked perfectly.

The Skysight forecast is so precise that we did not need to look at clouds to find lift. When the clouds went one way and Skysight went another way we found it was better to follow the Skysight prediction. We literally do not need to look out the window to find lift."



#### IGC Upload



#### **3D Wave Forecast**



## Integrations

#### Naviter / SeeYou



#### Naviter / Oudie





#### LXNAV / LX9000





#### SkySight Offline - Android



OR



#### SkySight Offline - iPhone



#### SkySight Offline



## SkySight

https://skysight.io/ matthew@skysight.io

#### Why should you subscribe to SkySight?

- You'll take less dud launches too early in the day
- You'll go flying more often will let you find places to fly when other models may say it's not possible
- You'll fly further with knowledge of the good weather out there and the end of day forecasts
- You'll spend less days at the club waiting for weather that isn't coming
- Cheapest performance increase money can buy "cheaper than winglets!"





- Probabilities
  - What is the chance of rain for a given point?
  - How likely is that it will exceed 25°c?
  - Mean values
    - What is the most likely temperature?
    - What is the average rainfall predicted across all the models?
- Extreme values
  - What is the highest possible rainfall?
  - Could the winds exceed 60kph?



