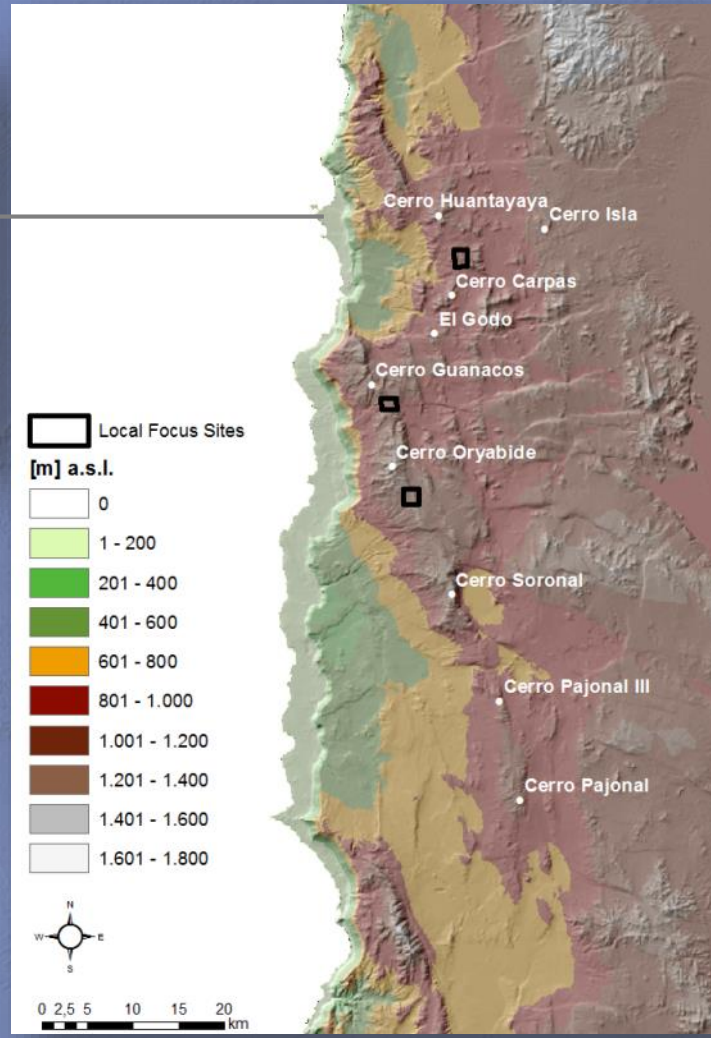
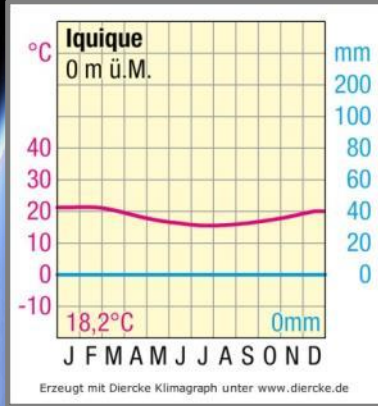


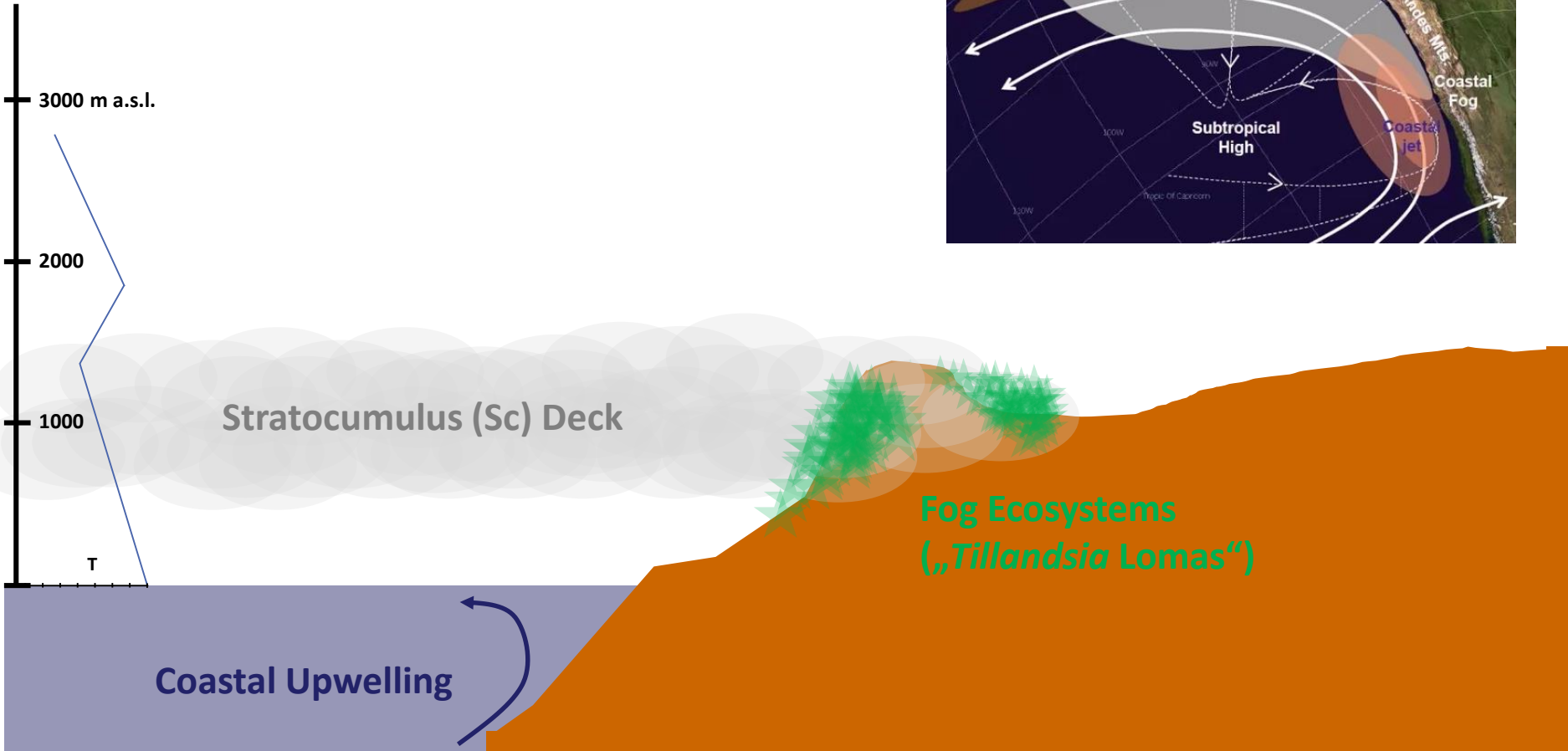
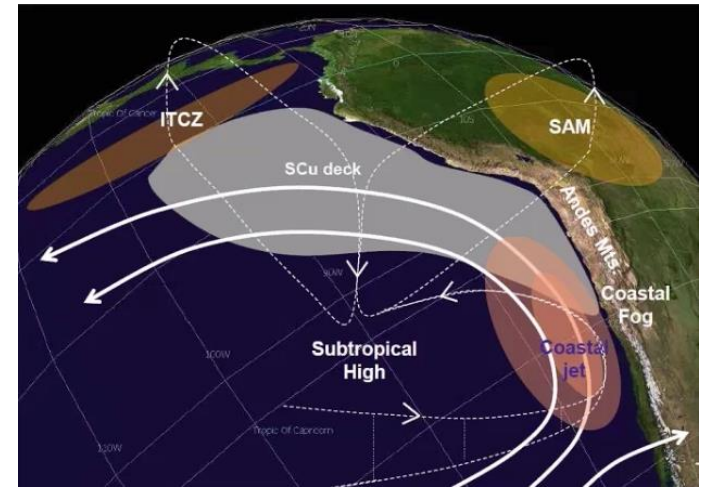


Fernerkundliche Erfassung von Nebelökosystemen der chilenisch-peruanischen Küstenzone

Julia Schumacher, Dr. Anne Schneibel, Prof. Dr. Alexander Siegmund & Camilo del Rio

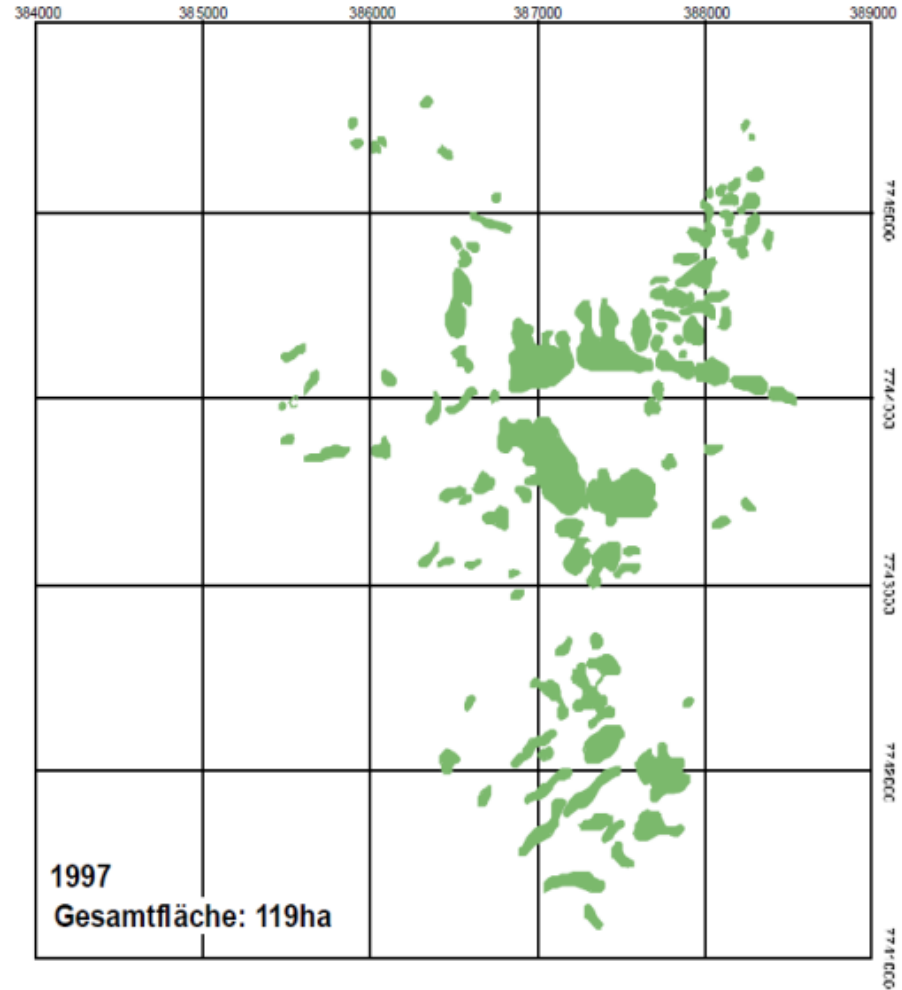
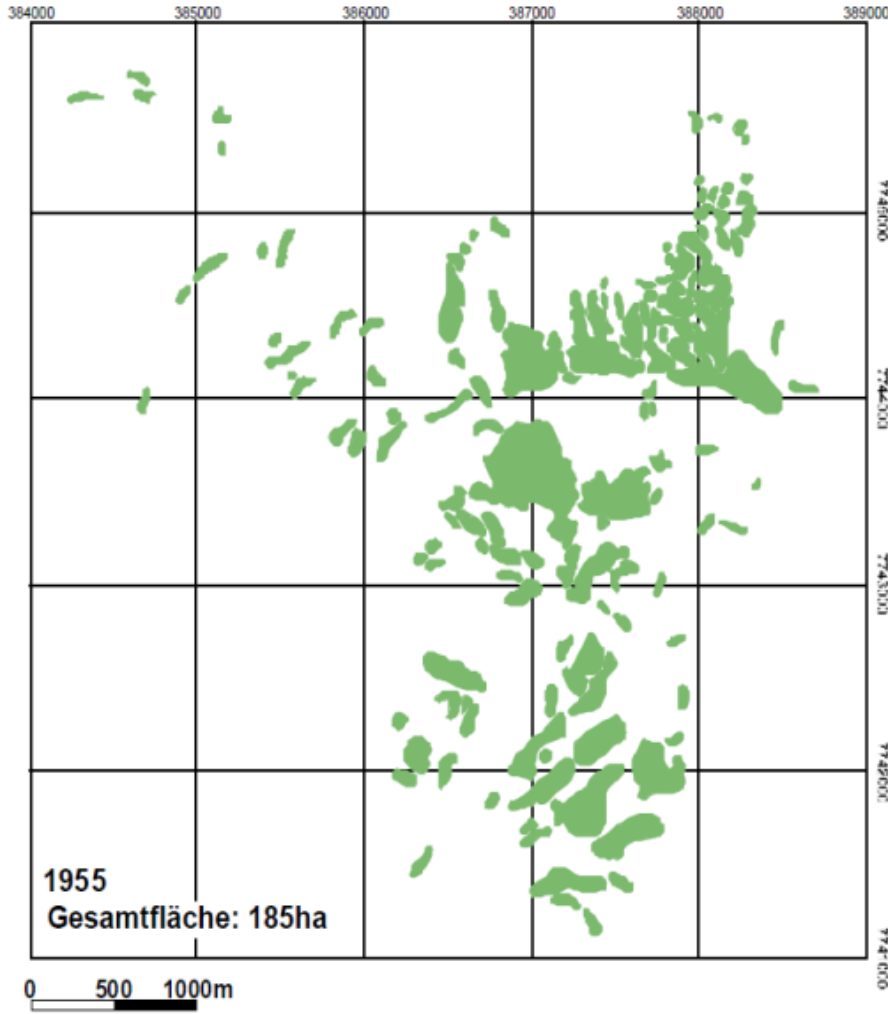


Atacama Desert

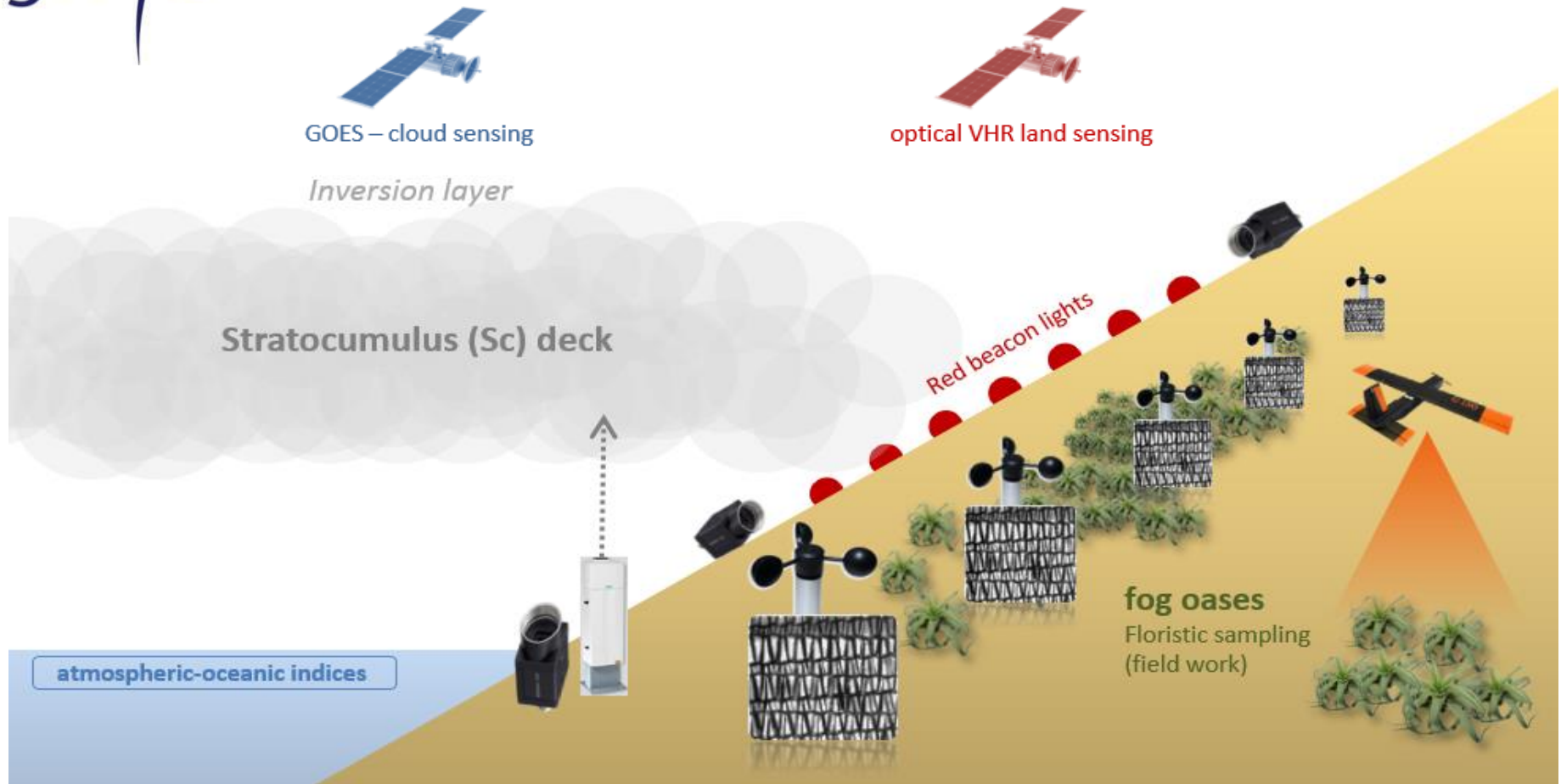




Cerro Guanacos: 35% Abnahme zwischen 1955 und 1997



Schulz (2009), based on data of P. Osses, Pontificia Universidad Catolica de Chile



Standard Fog Collector
Fog water deposition



Ceilometer
cloud bottom altitude



Meteorological satellites (GOES)
cloud top altitude & spatial/temporal distribution



Fixed-wing UAV
detailed mapping of selected fog oases along latitudinal gradient



Climate station Wind speed/-direction, air temperature, humidity, air pressure



Skyimager
cloud cover percentage



Optical VHR satellites
areawide mapping of study area / fog oases

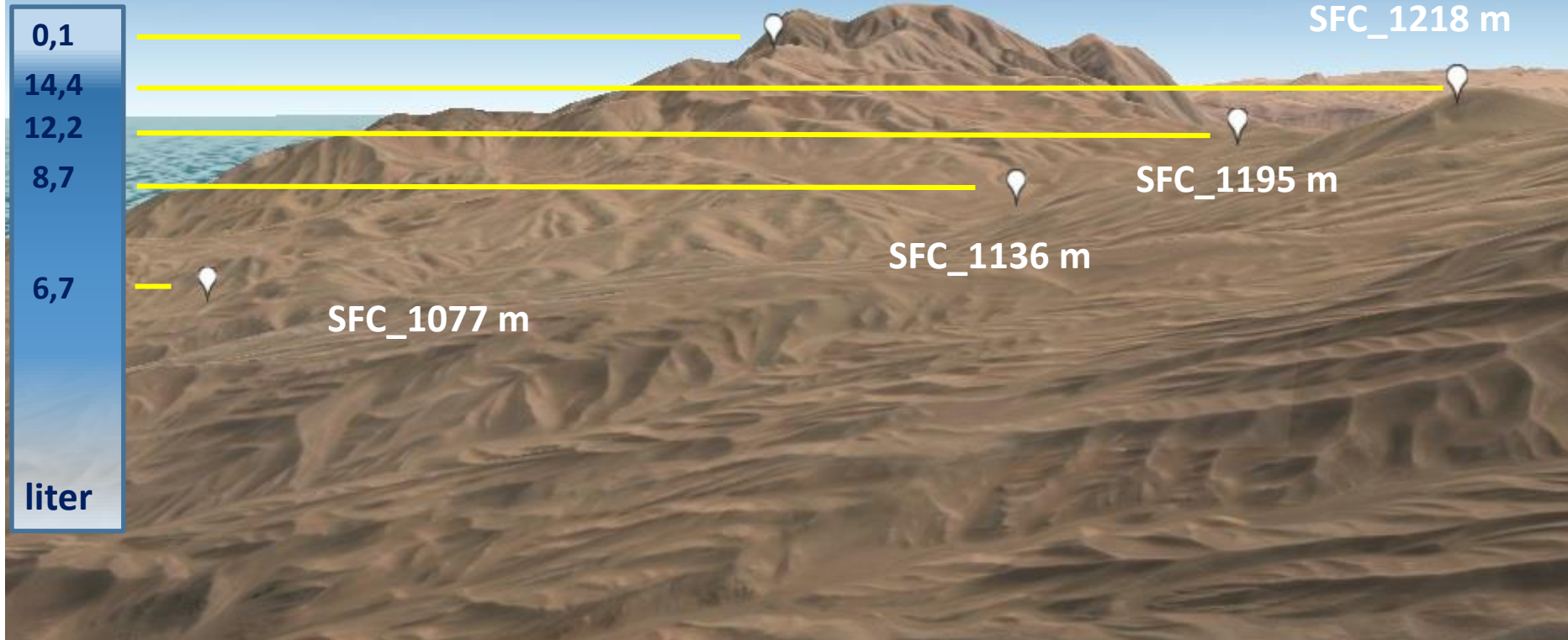


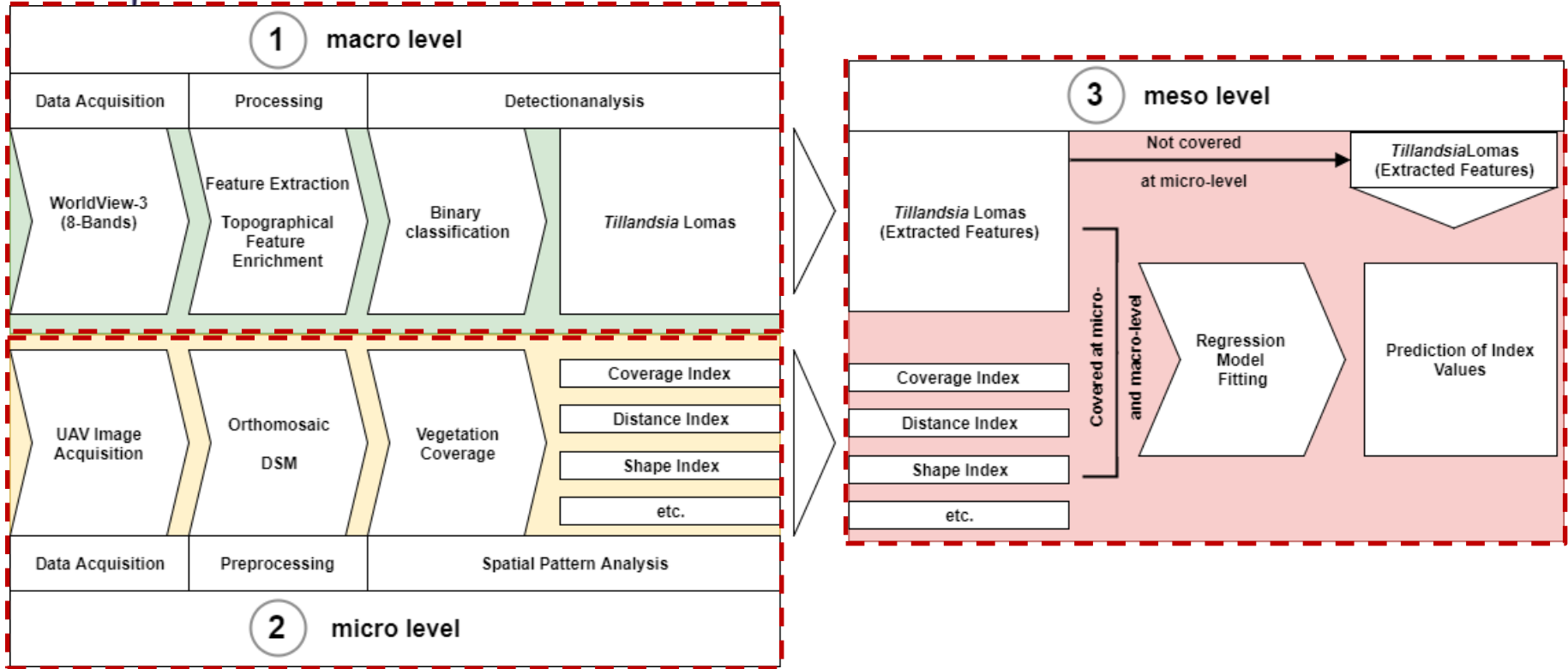
Time lapse camera
cloud bottom and top height by visibility analysis



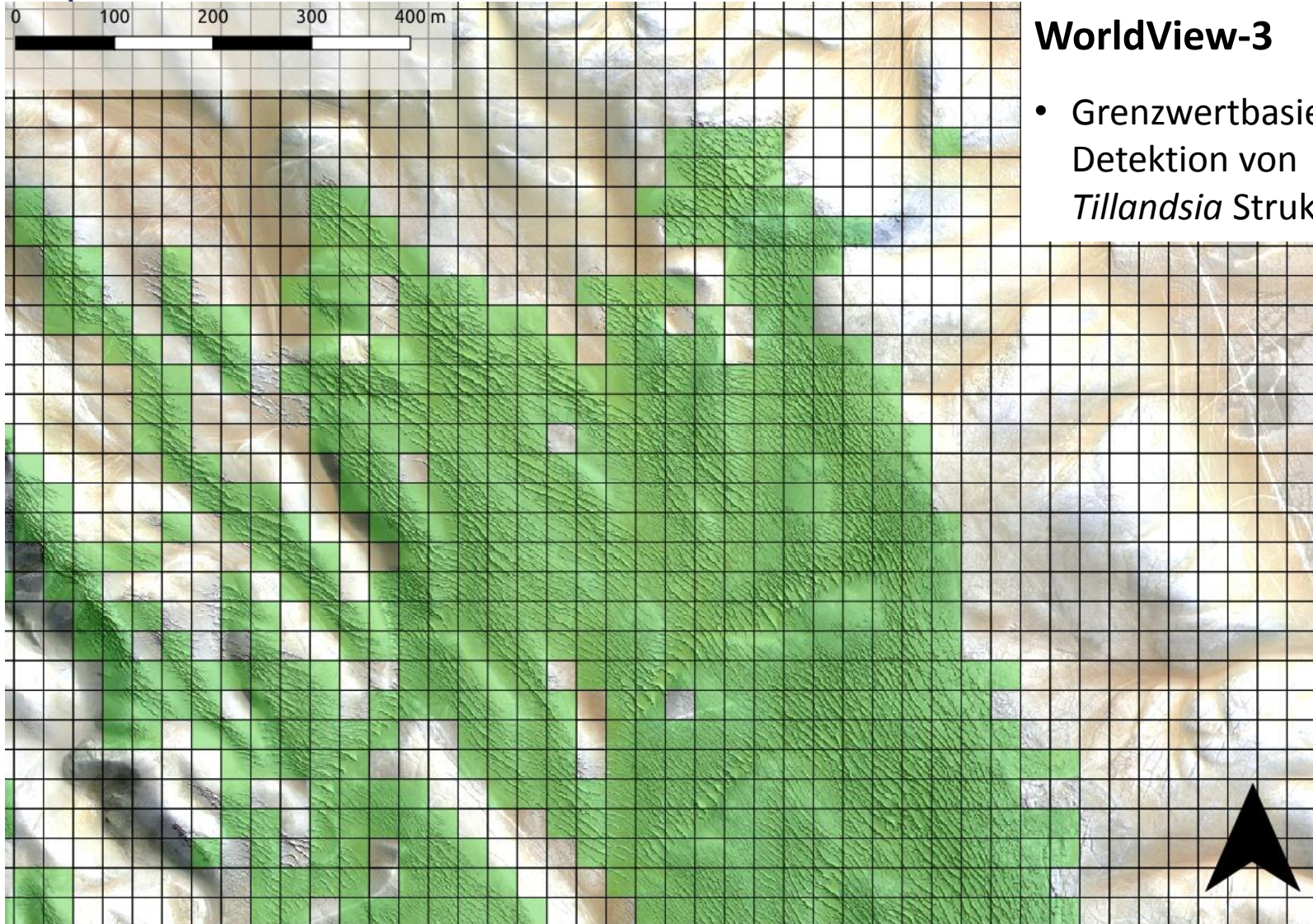
SFC Fog Water Measurement from 01.08.2015 to 08.08.2015

Sc-Clouds



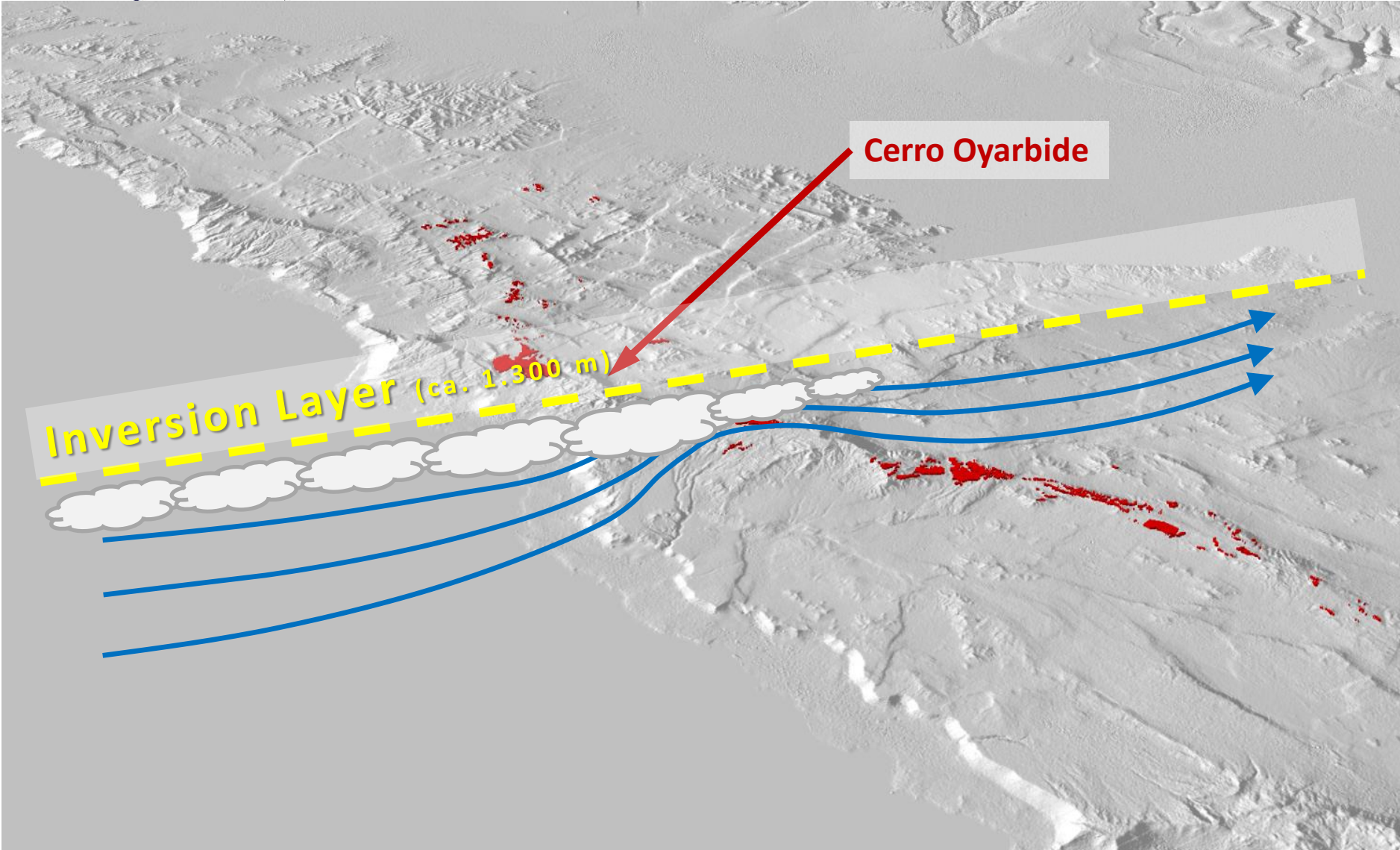


1. **Makro-Ebene:** Detektion der *Tillandsia*-Flächen im gesamten Untersuchungsgebiet
2. **Mikro-Ebene:** Lokale quantitative Analyse und Beschreibung der räumlichen Strukturmaße ausgewählter *Tillandsiale* (Bestandsstrukturanalyse)
3. **Meso-Ebene:** Extrapolation der lokalen Bestandsstrukturmaße auf die Makro-Ebene (detektierte *Tillandsia*-Flächen)



WorldView-3

- Grenzwertbasierte Detektion von *Tillandsia* Strukturen





“Safe Universal Sensor and Instrument carrier” (SUSI-62)

- Gewicht: 5-7 kg
- Traglast: 5 kg
- Flugzeit: max. 2 h
- Range: 2 km
- Max. Geschwindigkeit: 25 km/ h
- Motor: Zweitakter, 5.5 PS

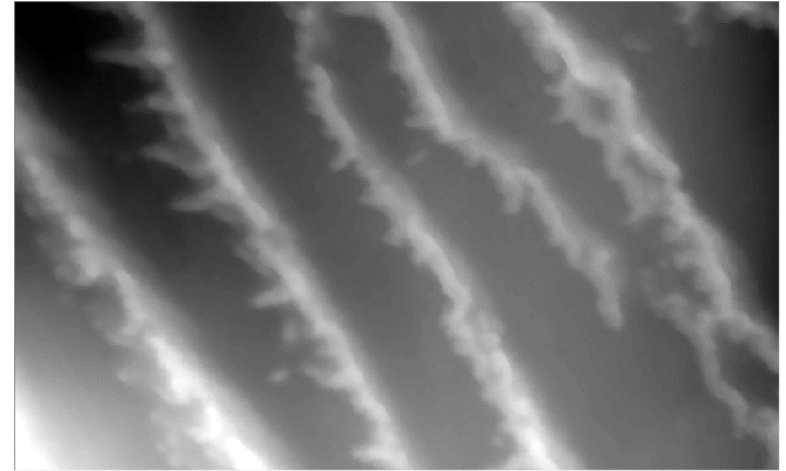


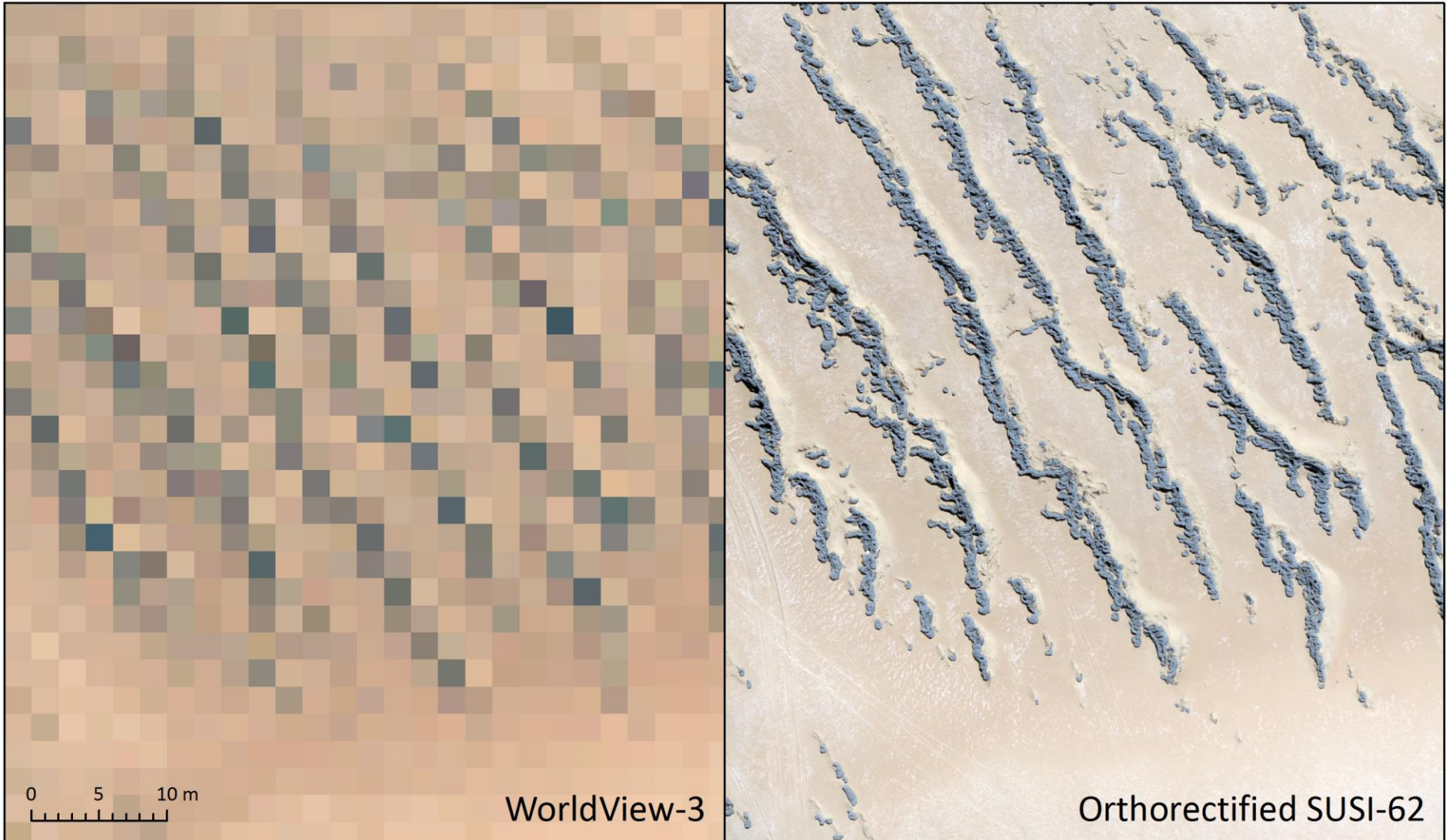
DJI Phantom 3 Professional

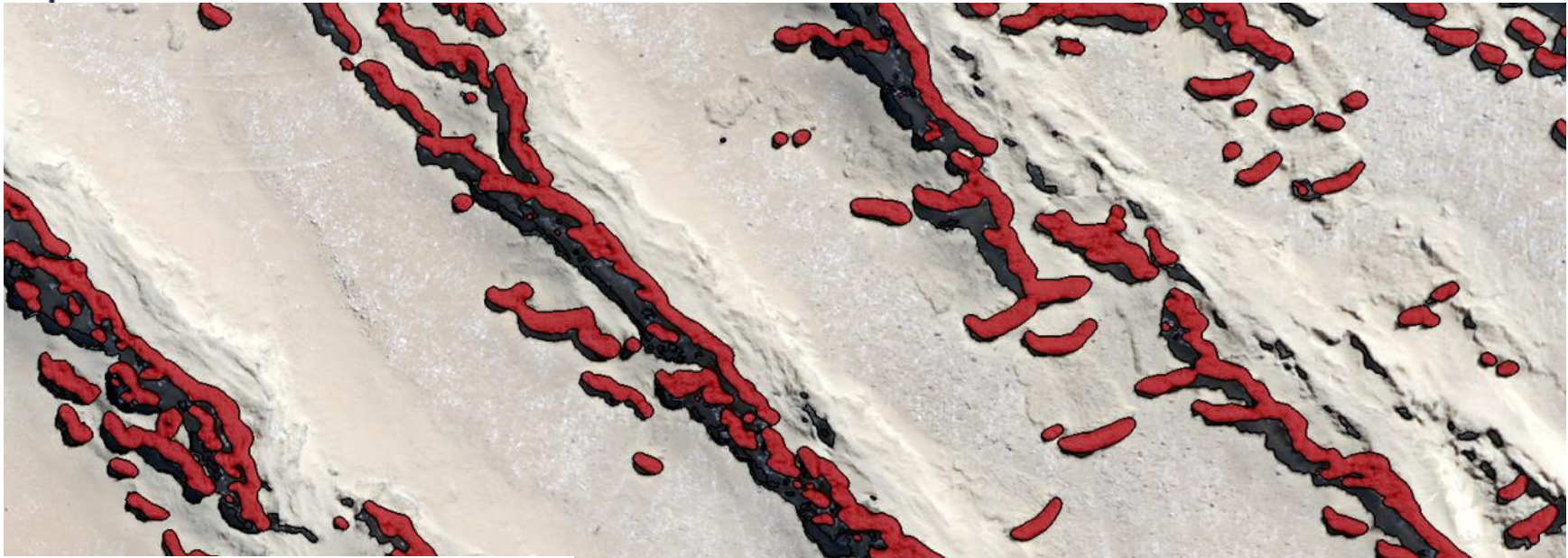
- Gewicht: 1280 g
- Traglast: -
- Flugzeit: ca. 23 min
- Range: 3.5 km
- Geschwindigkeit: 16 m/s

Agisoft PhotoScan Pro

- **DOM** (10 cm/px)
- **Orthophotomosaik** (RGB, 2 cm/px, ca. 4000 MP pro Untersuchungsgebiet)







GEOBIA

- Bildsegmentierung
- Grenzwert: Ratio Green
- Schwierigkeiten: Schatten
- Random Sample (n = 800)
- 2,45 % visuell nicht interpretierbar
- K = 0,98





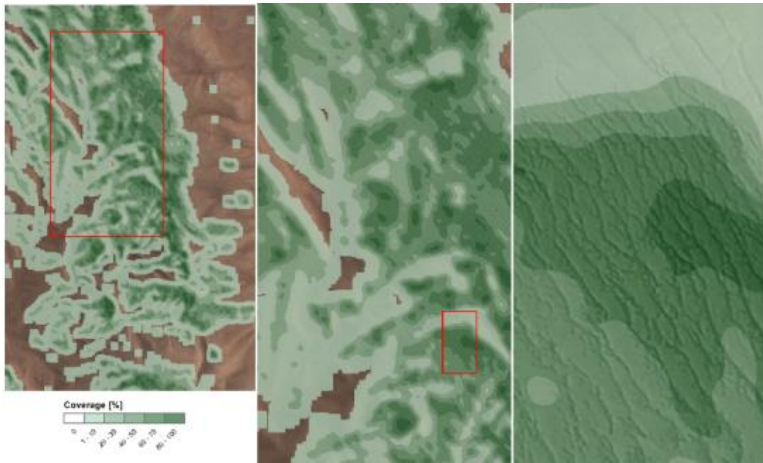
Abgeleitete Bestandsstrukturmaße

- Vegetation Cover Fraction
- Orientation
- Pattern formation / Periodicity (clustering, StdDev orientation)
- Band width / inter-band spacing
- Micro relief

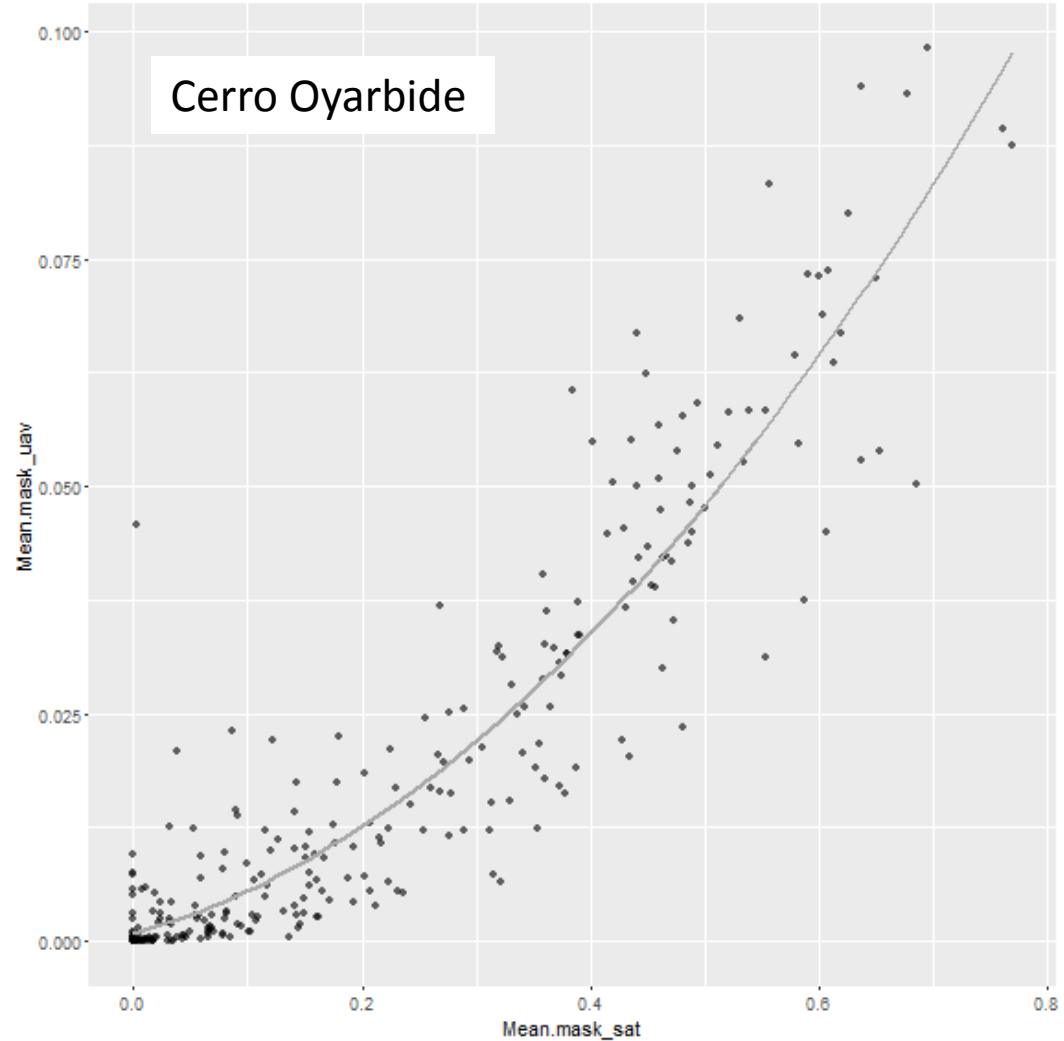




WorldView-3



Vegetation Cover Fraction



Vielen Dank!



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