CAMS COVERAGE FOR BRAMS METEOR ECHOS

- Evolution recent years
- Geometrics & density of the network
- Current situation
- Processing pipeline
- Future extensions

CAMS COVERAGE FOR BRAMS METEOR ECHOS
EVOLUTION RECENT YEARS

- CAMS started as a professional project (NASA)
  - Aim: to sample meteor orbits (~-2 to ~+5)
  - Started October 2010 in California (U.S.A.)
    - BeNeLux network 14 March 2012
    - CAMS USA, New Zealand, UAE, S.A.
  - So far over 500000 accurate orbits sampled
- Many minor streams detected and documented

CAMS COVERAGE FOR BRAMS METEOR ECHOS
EVOLUTION RECENT YEARS

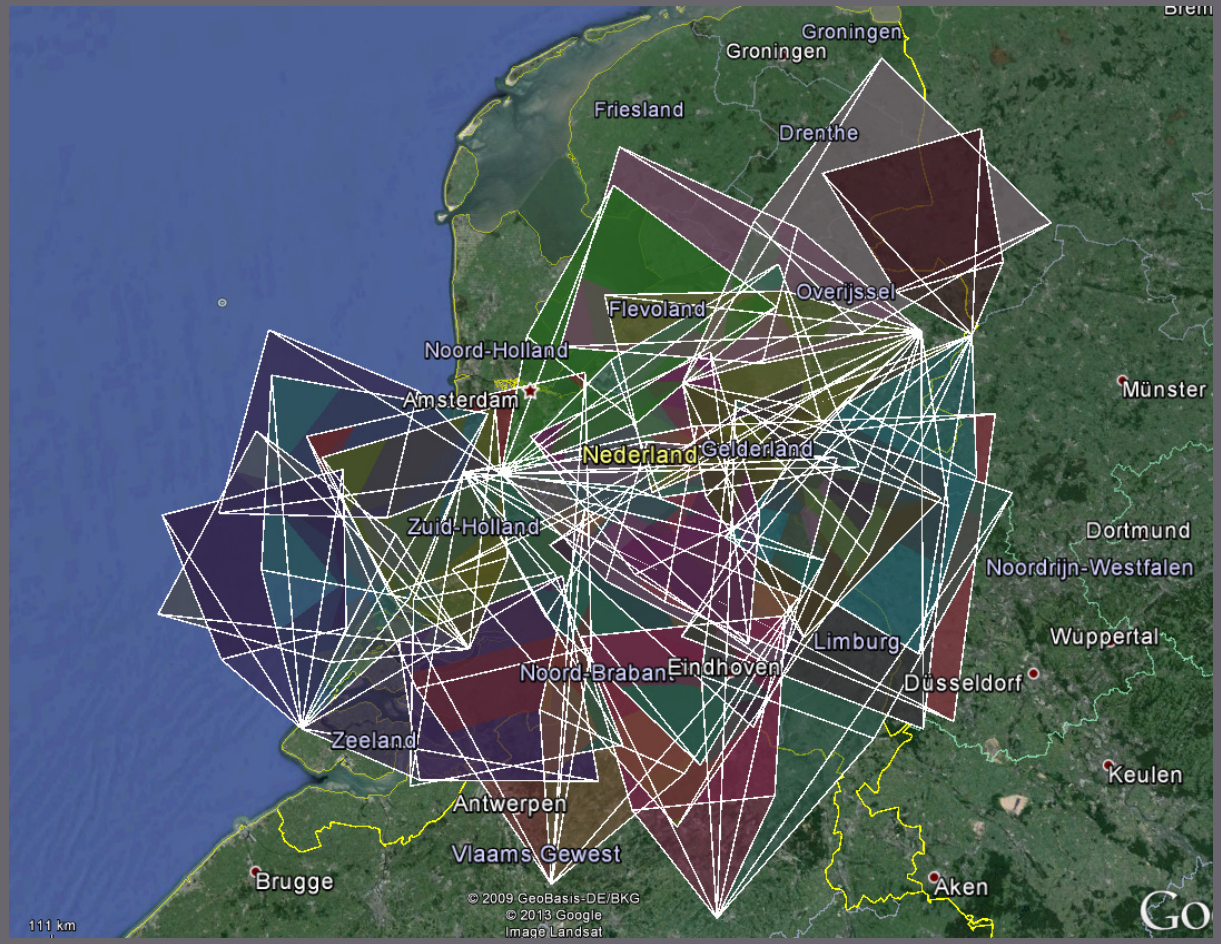
CAMS BeNeLux = team work by volunteers

Self-financed = strong commitment

Year	Average number of nights per month	Number of orbits collected	Average number of cameras on clear nights	Maximum number of operational cameras	Number of CAMS stations	Number of nights with successful recorded orbits
2012	10.1	1079	2.6	8	6	101
2013	16.5	5684	9.5	26	13	198
2014	22.4	11288	20.6	37	14	269
2015	24.5	17259	30.1	49	15	294
2016	25.8	25187	40.3	58	21	309
2017		*24442*		*86*	*22*	
Totals		84939				1171

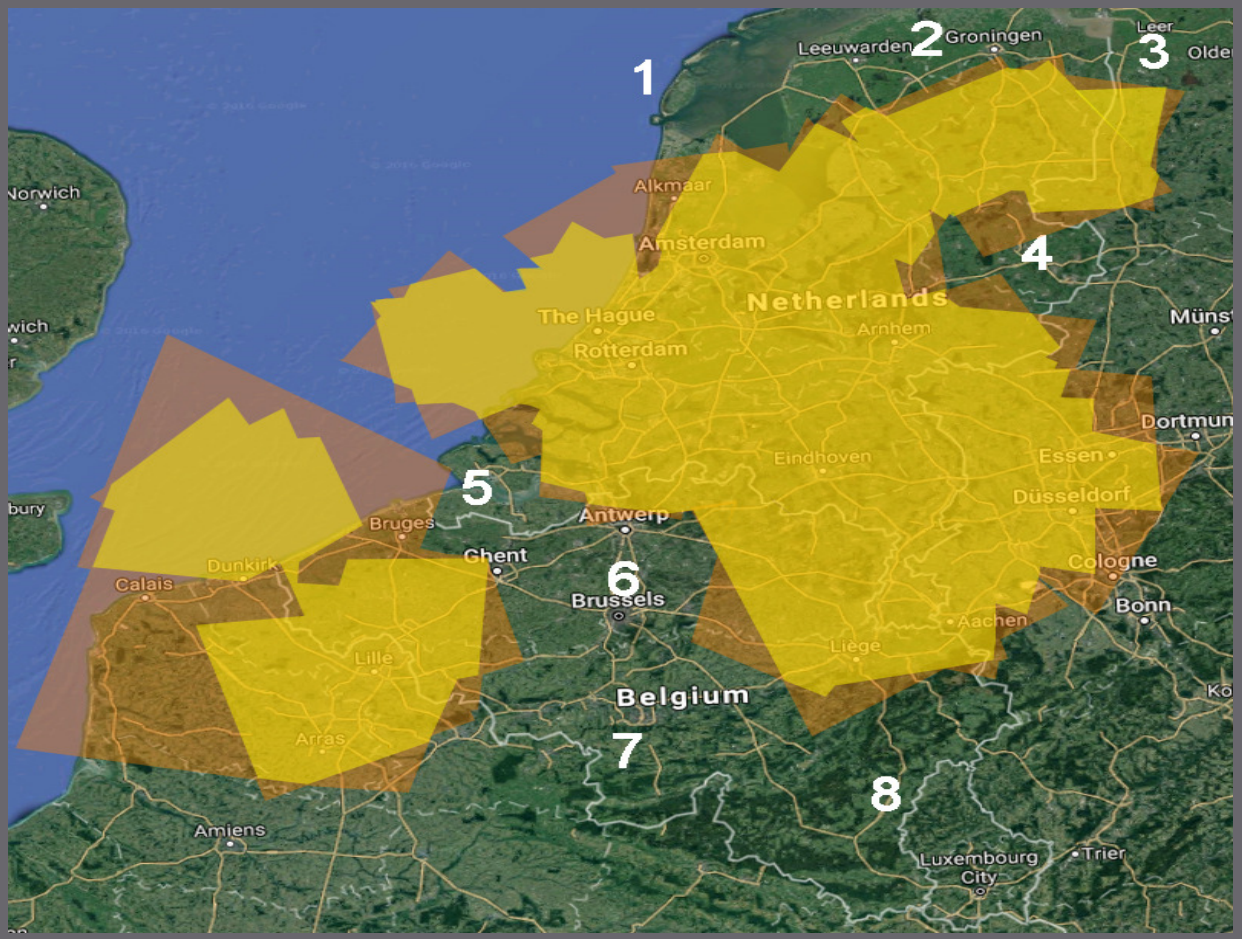
CAMS COVERAGE FOR BRAMS METEOR ECHOS
EVOLUTION RECENT YEARS

Status November 2013: CAMS for BRAMS ?



CAMS COVERAGE FOR BRAMS METEOR ECHOS
EVOLUTION RECENT YEARS

Situation 2016 and priorities for 2017



CAMS COVERAGE FOR BRAMS METEOR ECHOS
EVOLUTION RECENT YEARS

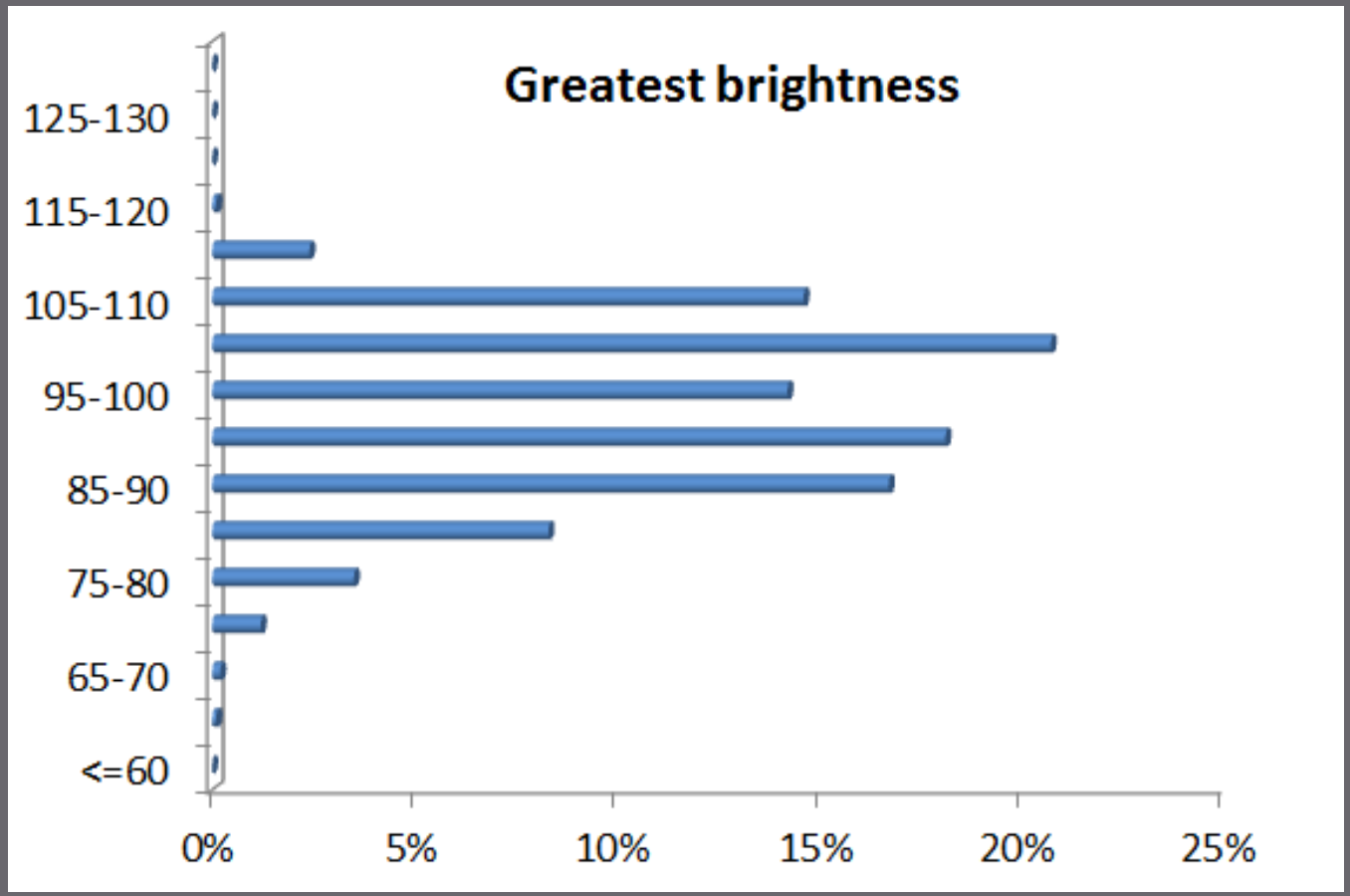
Situation 2016 and priorities for 2017

- To determine ideal elevation for coverage
  - To check the optimal geometrics
  - To optimize the camera directions
  - To complete coverage of BeNeLux
- To keep the processing pipeline under controll

How to do that?

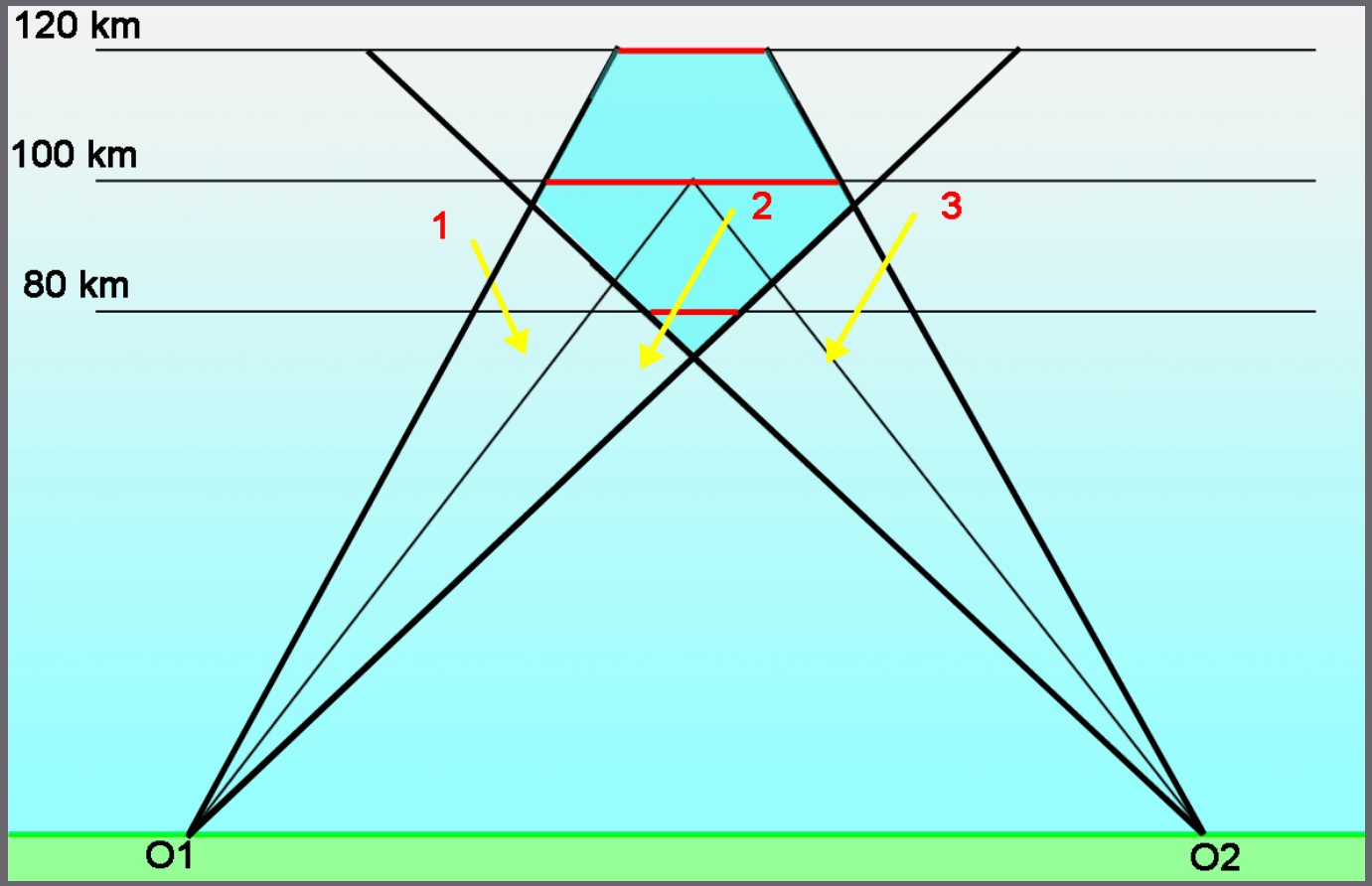
CAMS COVERAGE FOR BRAMS METEOR ECHOS
GEOMETRICS & DENSITY OF THE NETWORK

Height distribution ~100000 CAMS meteors



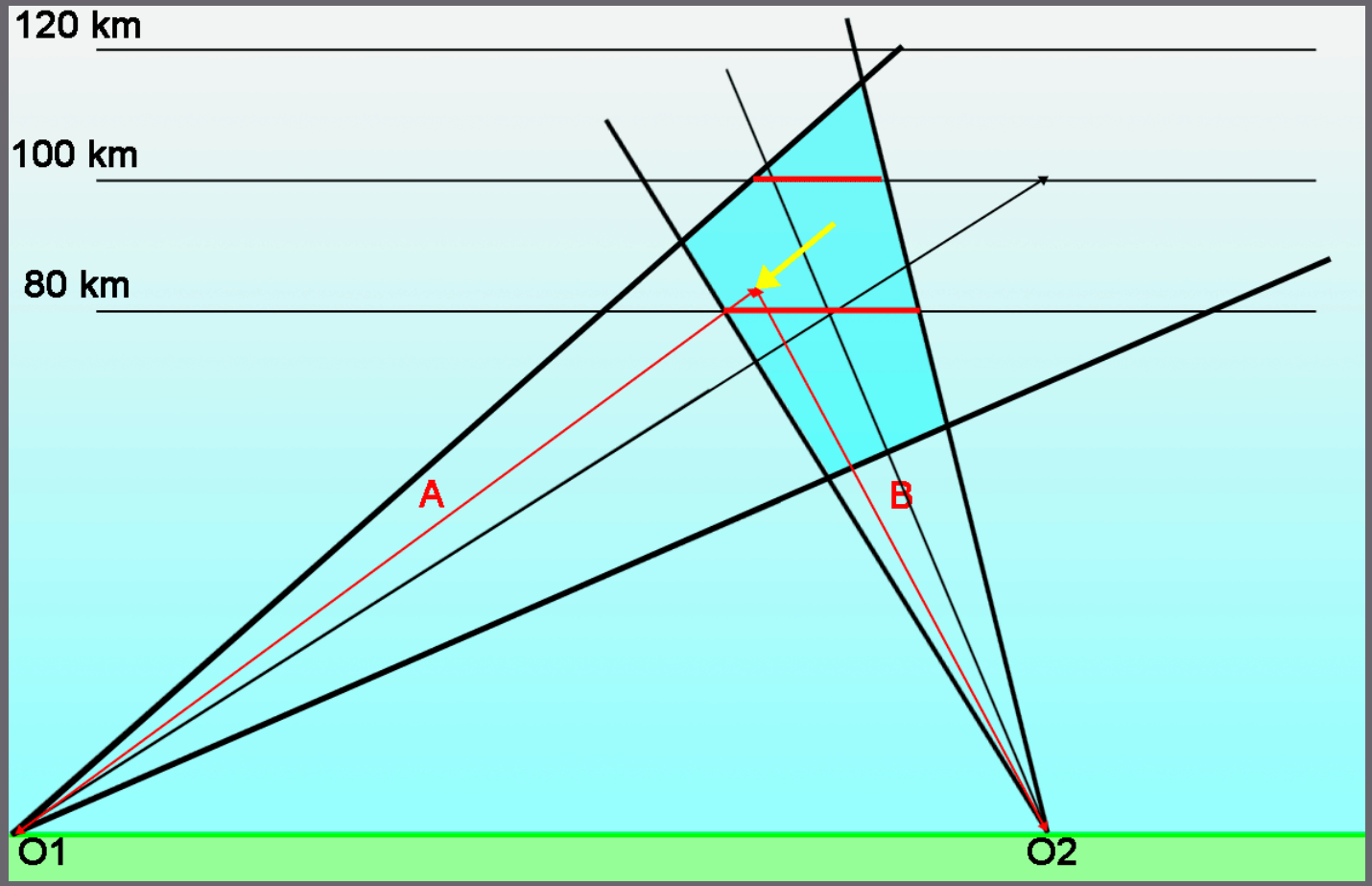
CAMS COVERAGE FOR BRAMS METEOR ECHOS
GEOMETRICS & DENSITY OF THE NETWORK

Optimizing common volume camera fields (22° × 30°)



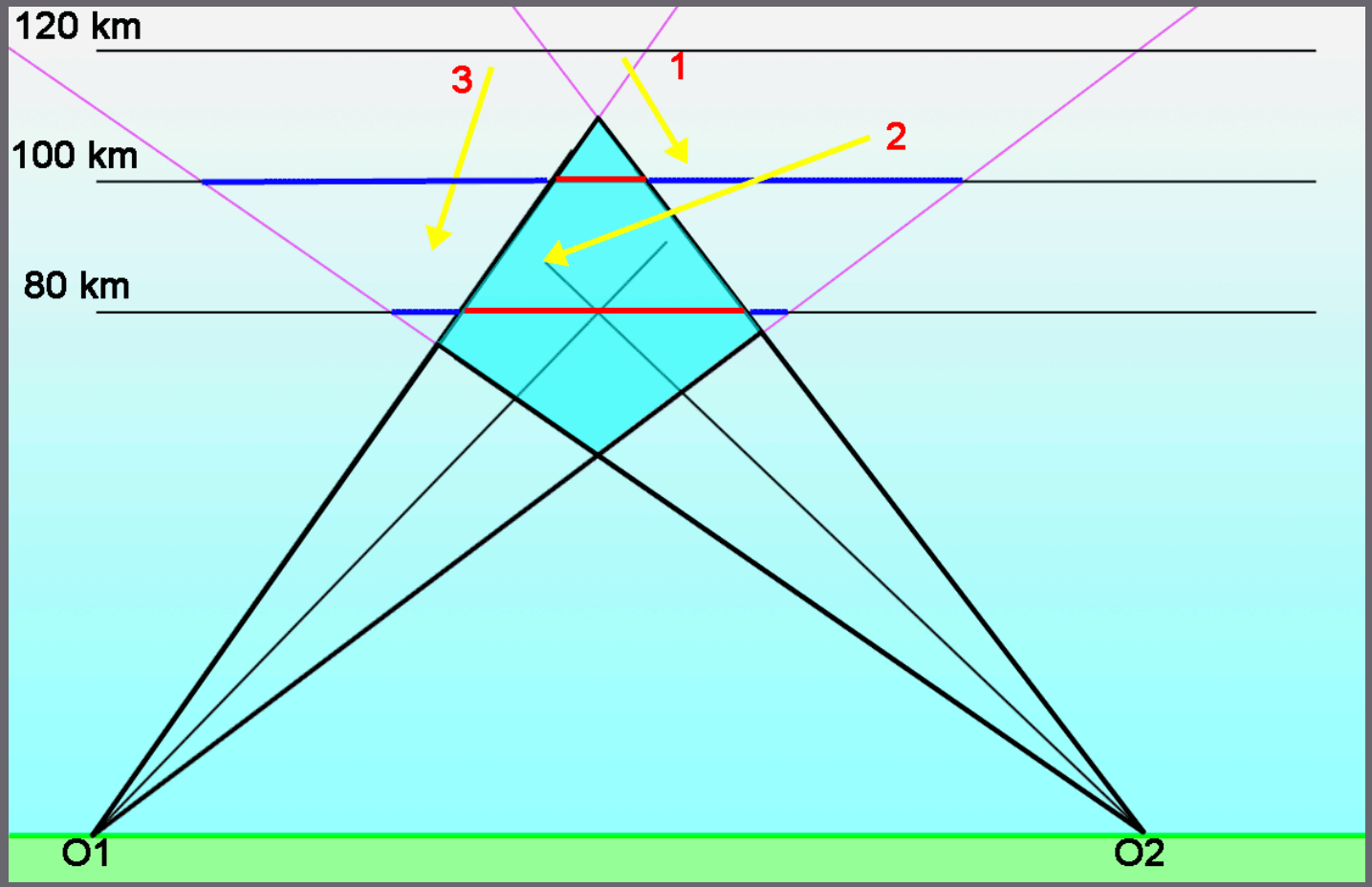
CAMS COVERAGE FOR BRAMS METEOR ECHOS
GEOMETRICS & DENSITY OF THE NETWORK

Geometrics – Angle of convergence – Extinction



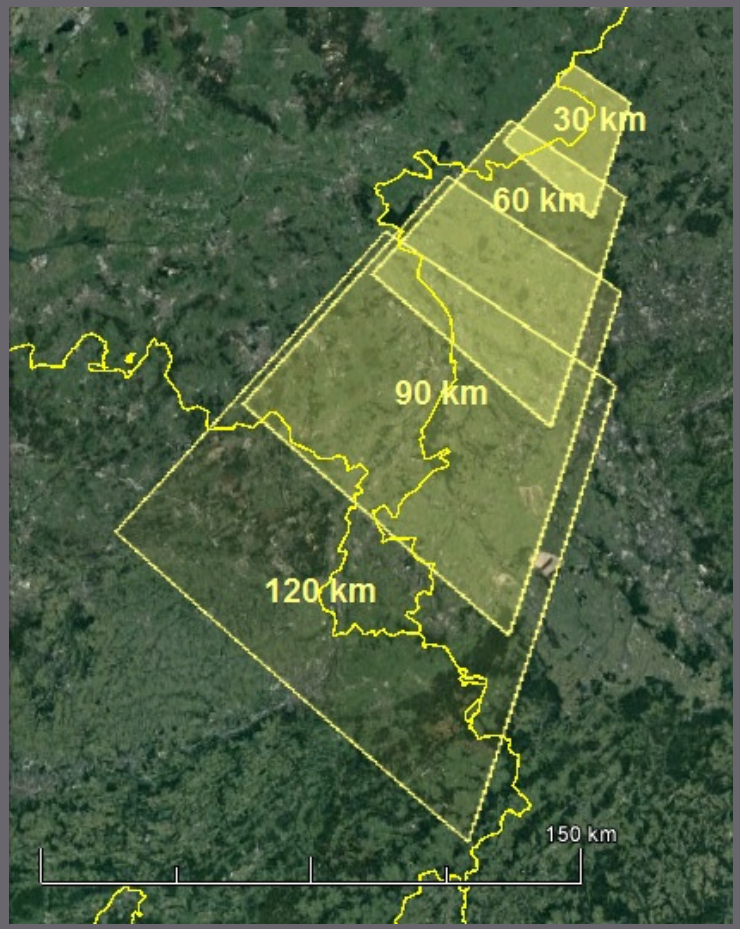
CAMS COVERAGE FOR BRAMS METEOR ECHOS
GEOMETRICS & DENSITY OF THE NETWORK

Optimal level of overlap 100, 90 or 80 km?



CAMS COVERAGE FOR BRAMS METEOR ECHOS
GEOMETRICS & DENSITY OF THE NETWORK

Choice of level to cover versus number of cameras



CAMS COVERAGE FOR BRAMS METEOR ECHOS
CURRENT SITUATION

Installing CAMS at OCA (Grapfontaine)

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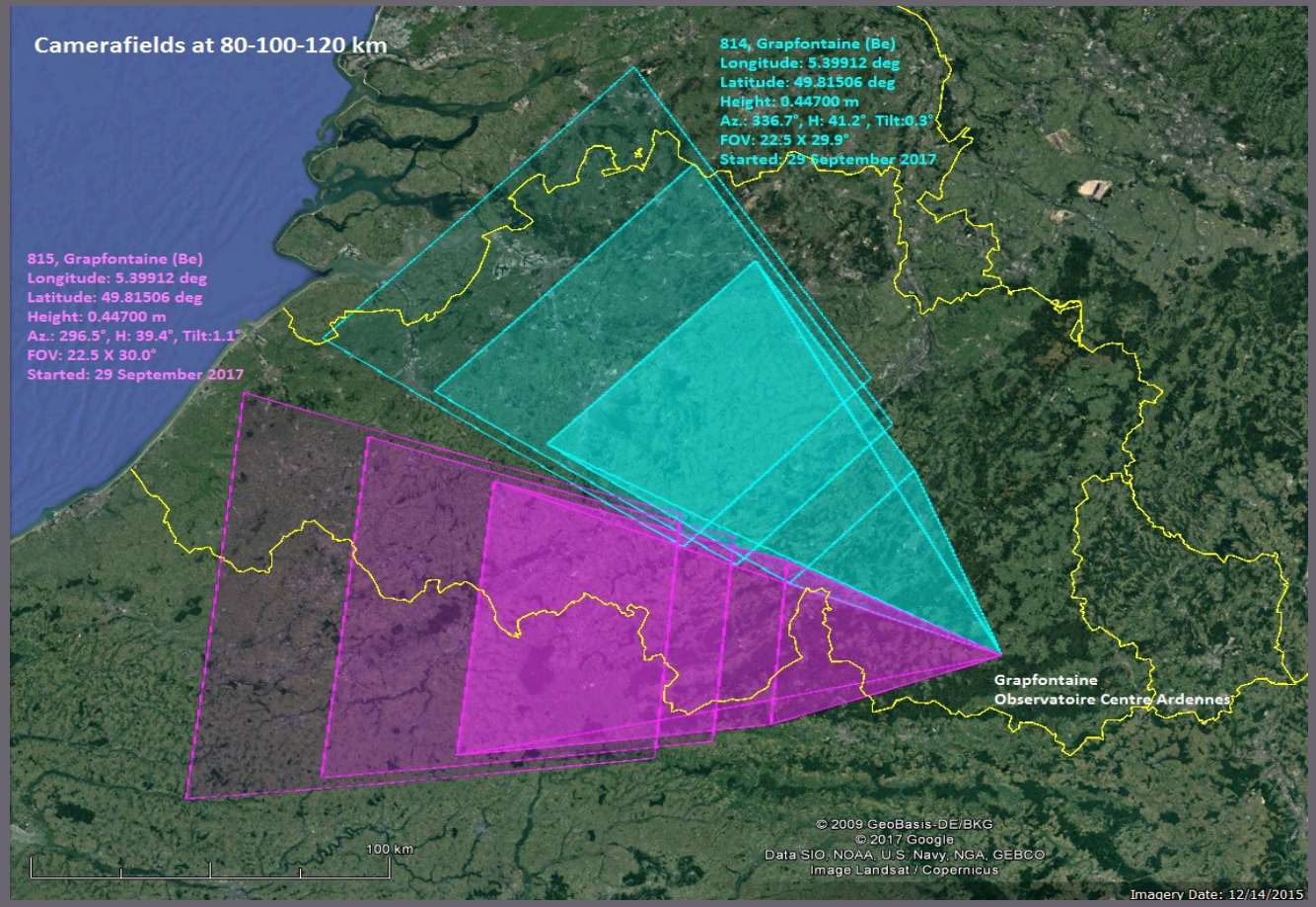
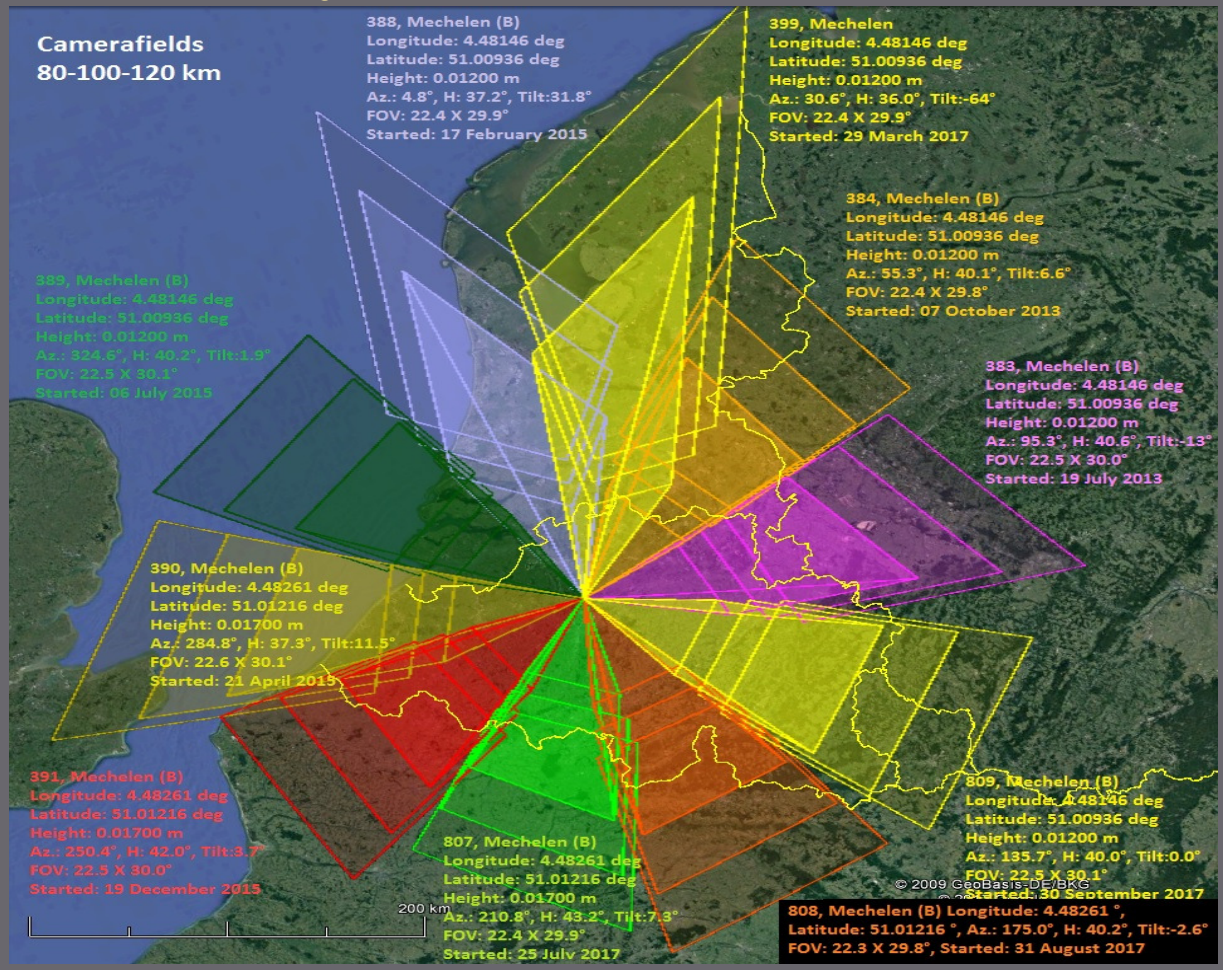


CAMS COVERAGE FOR BRAMS METEOR ECHOS
CURRENT SITUATION

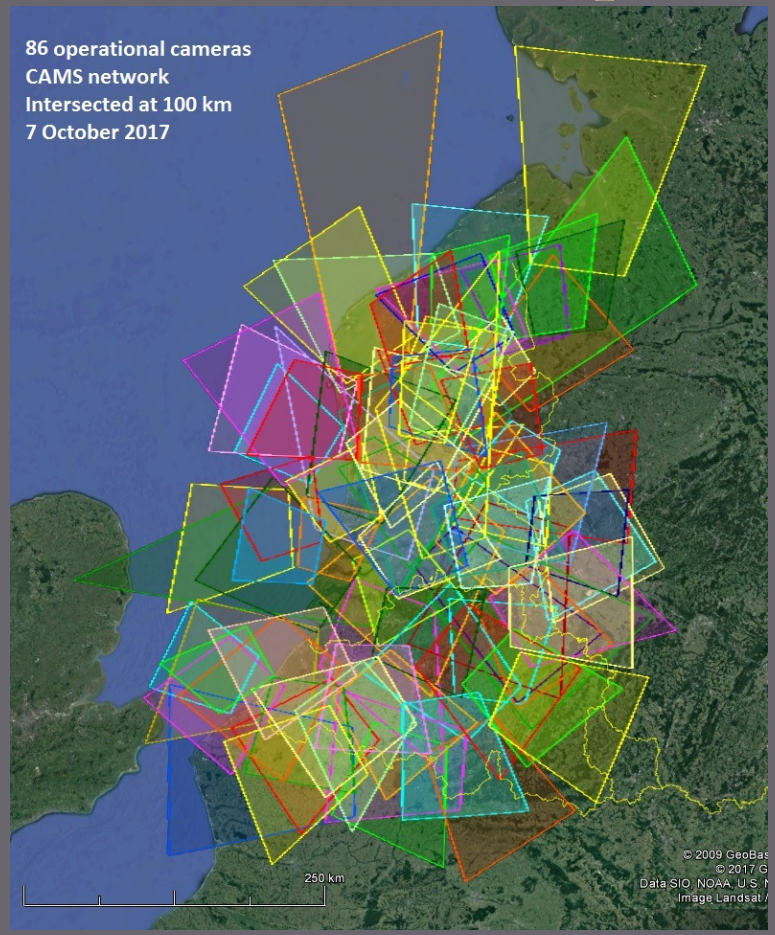
Currently 10 cameras in Mechelen



CAMS COVERAGE FOR BRAMS METEOR ECHOS
CURRENT SITUATION

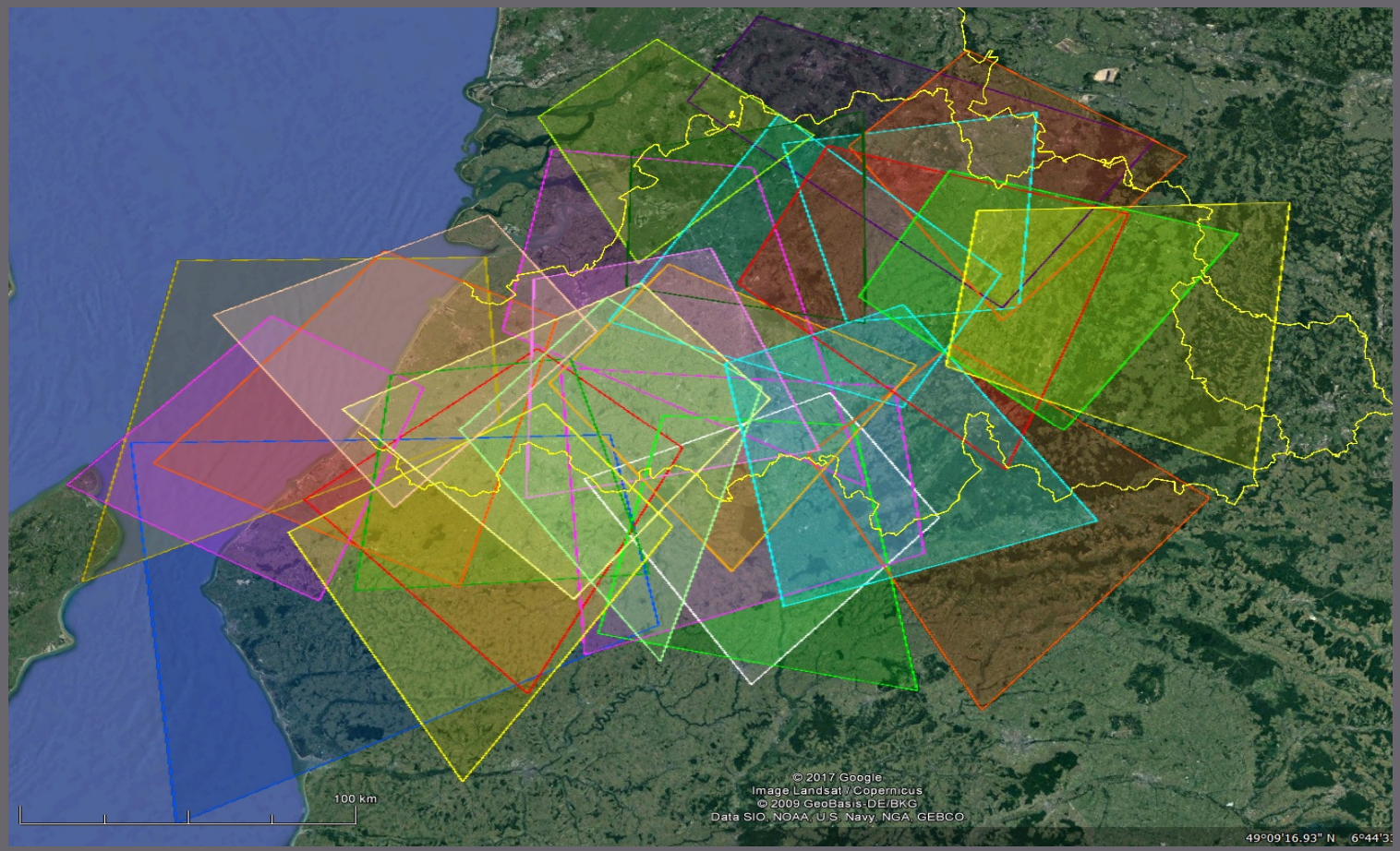
CAMS COVERAGE FOR BRAMS METEOR ECHOS
CURRENT SITUATION

Current overlap



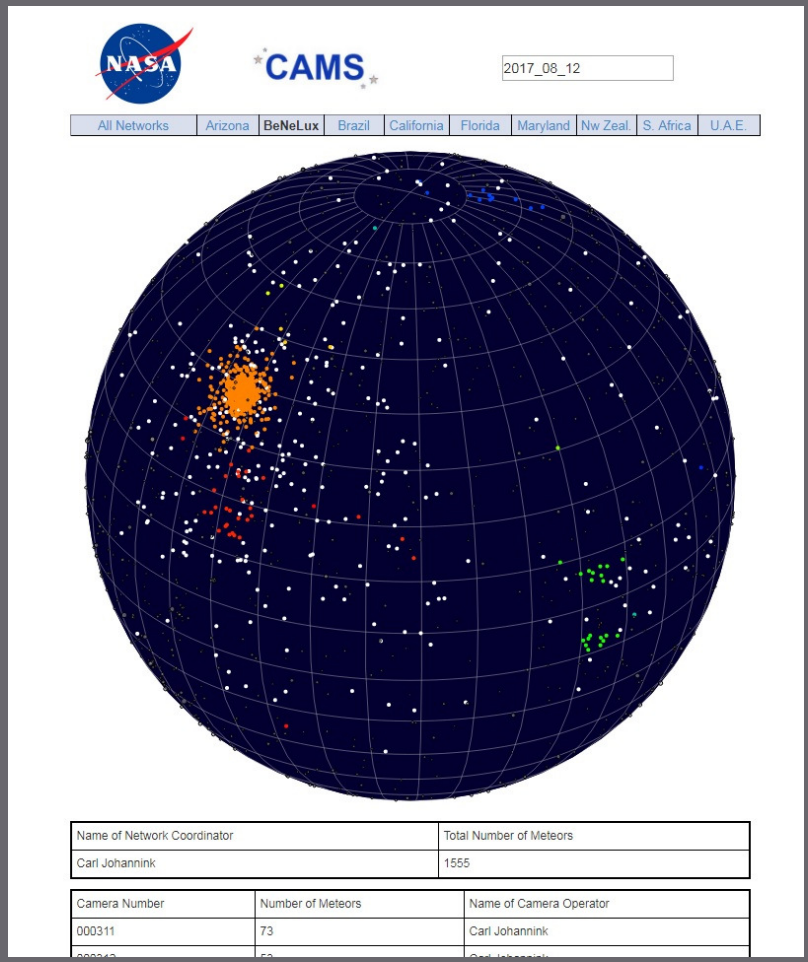
CAMS COVERAGE FOR BRAMS METEOR ECHOS
CURRENT SITUATION

Coverage Belgium



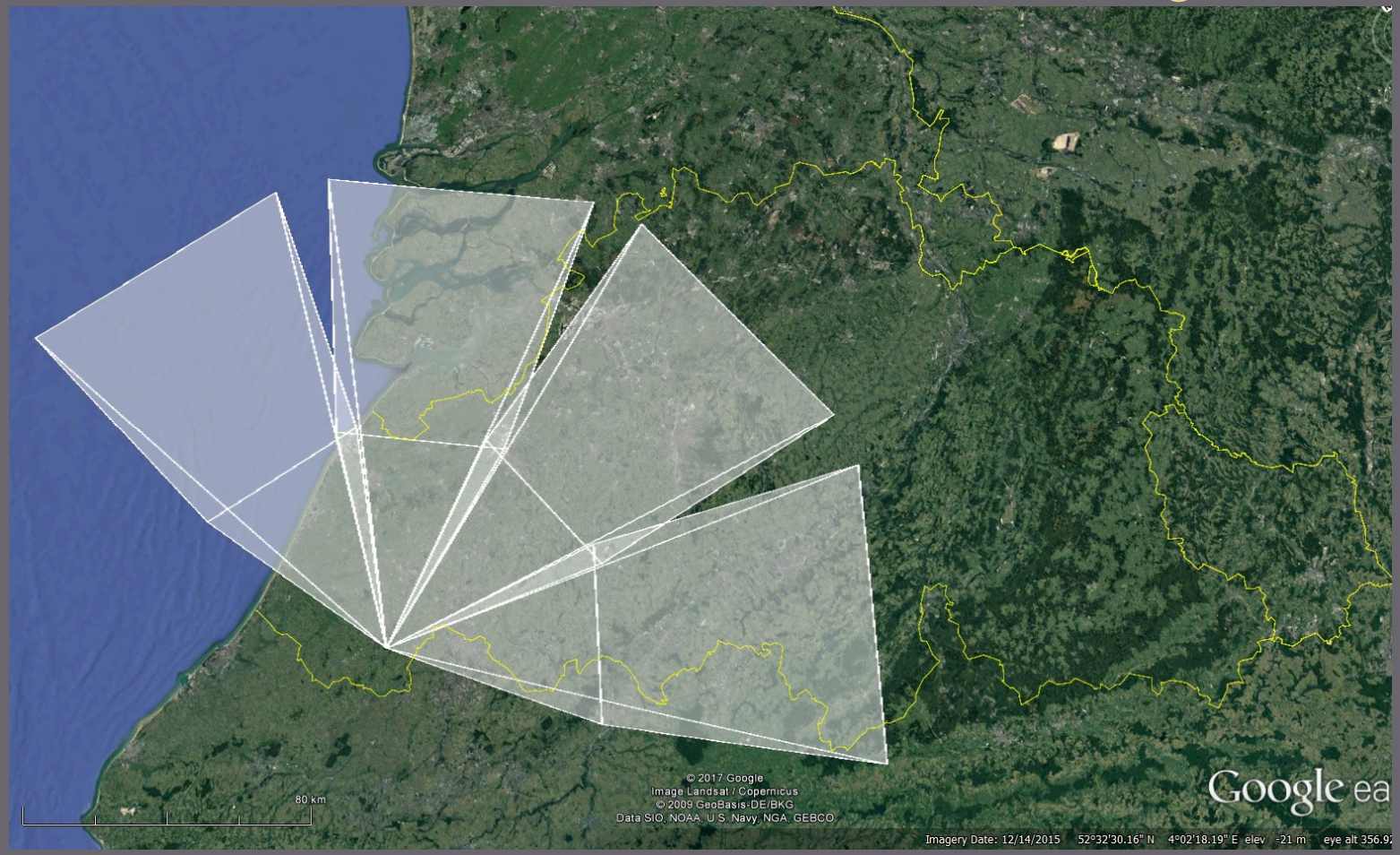
CAMS coverage for BRAMS Meteor Echos
Processing Pipeline

- New CAMS networks
- Significant increase data from CAMS BeNeLux (From 1% in 2012 to 25% of total orbits per year)
- New version CAMS 2.2
- More AutoCAMS
- New Online tool to visualize orbit distribution



CAMS COVERAGE FOR BRAMS METEOR ECHOS
FUTURE EXTENSIONS

Future extensions: more camera field ranges



CAMS COVERAGE FOR BRAMS METEOR ECHOS
FUTURE EXTENSIONS

Specific for Belgium

Point 395 Dourbes & 816 Humain above Luxembourg?
Create a dataset of all CAMS-BRAMS common events?

What do we still need?

- Still more cameras
- Extra sites at strategic positions near the border of the network
- Volunteer hosts for remote CAMS Stations

CAMS COVERAGE FOR BRAMS METEOR ECHOS

Thank you!

Any questions?