Meteoroid Flux Determination using Image Intensified Video Camera Data from the CILBO Double Station

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- Magnitude Distribution
- Detection Probability
- Mass Distribution
- Flux
- Conclusion and Outlook
June 2013 – May 2014

La Palma (ICC9)

Tenerife (ICC7)
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- Magnitude Distribution
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Detected Magnitudes

![Bar chart showing detected magnitudes with peaks at 3.5 and 4 magnitude for both cameras ICC7 and ICC9. The x-axis represents magnitude with values from -2 to 6, and the y-axis represents the number of meteors.]

- ICC7
- ICC9
- Both cameras
Absolute Magnitude

\[ \Delta m = m_{ICC7} - m_{ICC9} - 2.5 \cdot \log \left( \frac{(100\text{km})^2}{d^2} \right) \]
Corrected Magnitude

ICC9 detected 15 % more
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Hourly Rate
Old Settings

Difference: 2 / hour

# / h

Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May

ICC7
ICC9
June 2014 – August 2014

Difference: 1.5 / hour
Light Pollution

La Palma (ICC9)

Tenerife (ICC7)
Sporadic Meteor Distribution
North → South

North to South
South to North

North → South
2 % more than
South → North
Sporadic Meteor Distribution
East → West

West → East
70 % less than
East → West
Sporadic Meteor Distribution

![Bar graph showing the distribution of sporadic meteors.

- **ICC7**: North-West
- **ICC9**: South-East

The graph indicates the number of meteors per hour of the night, with a peak in the early morning hours.
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Mass distribution

Verniani (1973) – Radio Data:

\[ M = 10 \left( \frac{-m + 64.09 - 10 \cdot \log \nu}{2.5} \right) \]
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Flux

\[
\text{Flux} = \frac{n}{A \cdot t_{\text{active}}}
\]

1000 km

Flux graph showing data points and model fits for different mass ranges.
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Conclusion

- Possible East/West dependency of the meteor count
- The calculated masses were in the expected size category
- The computed flux fits the Grün Model surprisingly well

Future Work

- Uncover more Systematic Errors
- Adjust Mass Model using Radar to Video Observations
- Determine the Discrepancy of In Situ Model to actual Video Computations
Thank you all for your attention!