

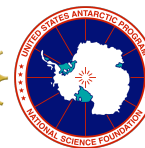
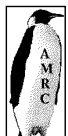
The analysis of Antarctic Cloud Mass Transport Events from Composite Satellite Imagery: Preliminary Results

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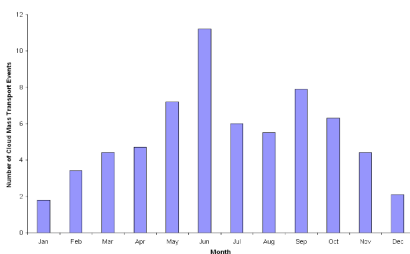
Acknowledgments:

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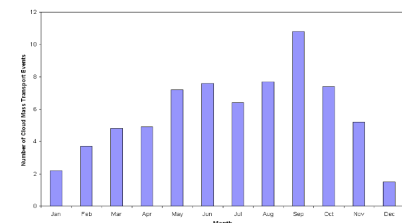
Past Research: Staude et al., 2004

CMT events are extremely prominent in West Antarctica (Marie Byrd Land and Ellsworth Land, specifically) and are crucial for forecasting and field season operations. Staude defined what a CMT event is and counted the number of total events occurring each month over the years 1992 to 2002 for four specific regions. The following charts show that austral winter months give rise to the most CMT events for West Antarctica.

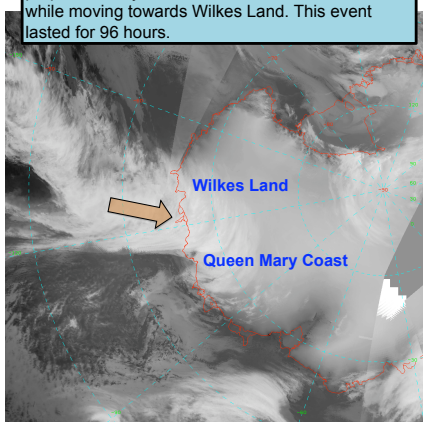
Yearly Cloud Mass Transport Averages by Month for Marie Byrd Land 1992-2002



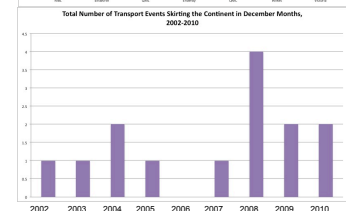
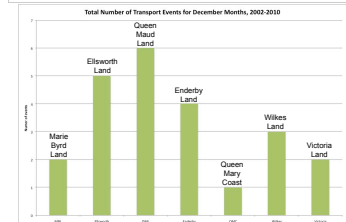
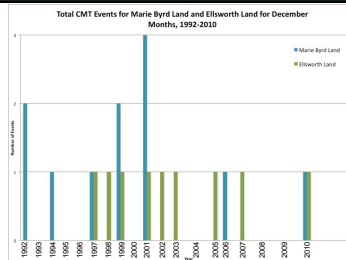
Yearly Cloud Mass Transport Averages by Month for Ellsworth Land 1992-2002



Case Study: December 5-9, 2010:
On December 5th, 2010 at 21 UTC a Cloud Mass Transport event began entering the continent over Queen Mary Coast. It continued to perpendicularly advect clouds onto the continent while moving towards Wilkes Land. This event lasted for 96 hours.



Preliminary Results:



What is a Cloud Mass Transport Event?:

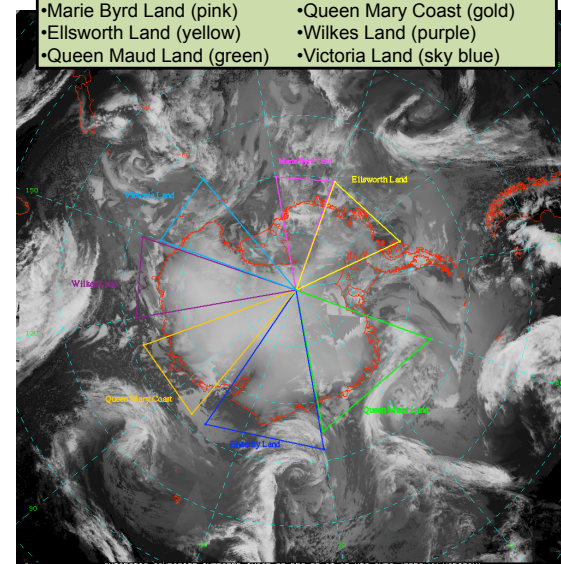
Definition (Staude et al., 2004): An event in which a cloud mass travels from an oceanic region perpendicularly onto the continent, lasting at least 48 consecutive hours.

Guidelines for Counting CMT Events:

- Clouds must be perpendicular to continent.
- Cloud mass must noticeably cross the coastline before a beginning time is counted.
- If there is a gap greater than 12 hours, it is counted as two separate events.
- If the event starts in one month and ends in another, it is counted as an event for the starting month.
- A CMT event is considered "skirting" if it starts transporting clouds in one region and continues to transport clouds while moving around the continent.

Antarctic Regions:

- Marie Byrd Land (pink)
- Ellsworth Land (yellow)
- Queen Maud Land (green)
- Enderby Land (blue)
- Queen Mary Coast (gold)
- Wilkes Land (purple)
- Victoria Land (sky blue)



Applications:

- Field season logistics planning
- Seasonal forecasting

Future Work:

- * Continue to count CMT events each month for years 2002-2010.
- * Look at surface observations to determine weather conditions during CMT events.
- * Diagnose synoptic-scale processes behind CMT events.



Poster by Elena Willmot

