

Using Rare Earth Elements (REE) to Determine Wind-Driven Soil Dispersal from a Point Source

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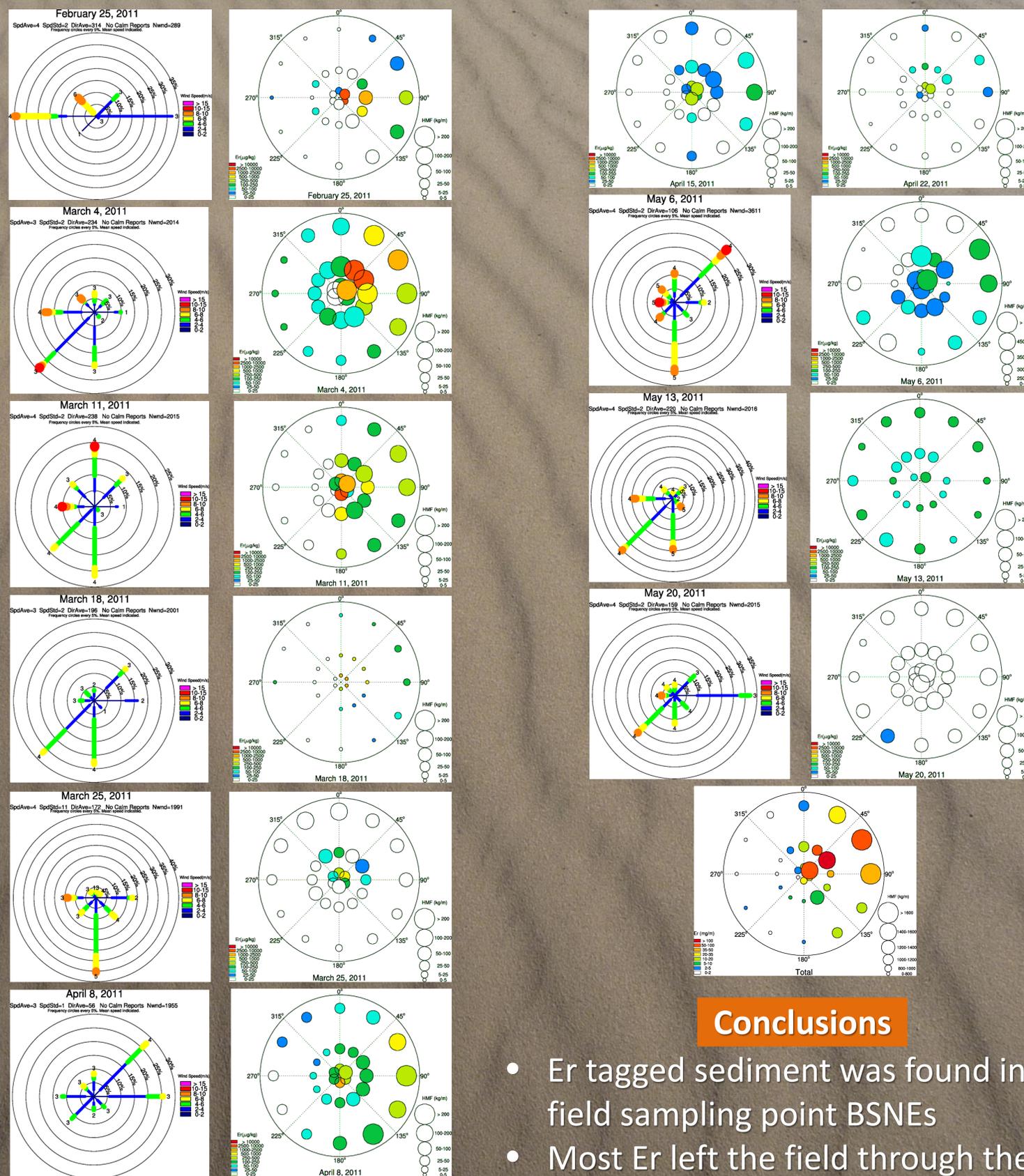
Introduction

- Erosive wind can blow from and move soil in all directions
- Most erosive wind events during the fallow season come from one general direction
- What is the net dispersal of sediment or a contaminant from a point source?

Methods

- We applied a solution of $\text{Er}(\text{NO}_3)_3$ to a 5 m² area at the center of a 100 m diameter circular field
- We placed BSNE samplers at 60° intervals along a 5 m radius circle
- We placed BSNE samplers at 30° intervals along a 20 m radius circle and a 50 m radius circle
- We collected and weighed sediment from BSNEs weekly to determine Horizontal Mass Flux (HMF) at each field sampling point
- We combined sediment from each BSNE mast weekly and extracted 2 g of sediment with 20 ml of 2 N HNO_3
- We analyzed supernatant for Er using ICP with ICP/MS accuracy check

Results



Conclusions

- Er tagged sediment was found in all field sampling point BSNEs
- Most Er left the field through the east boundary from due N to due S