

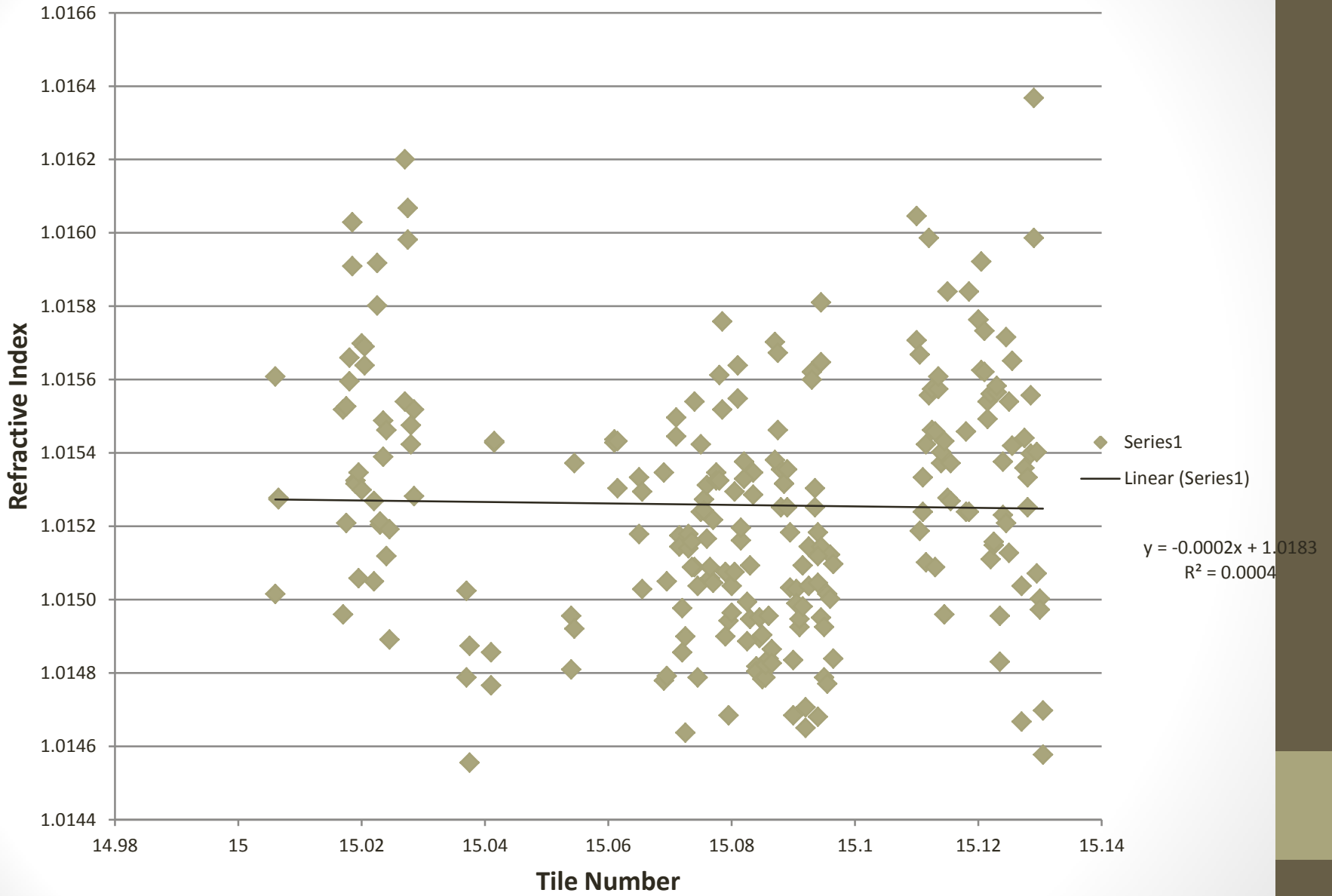
Aerogel Update

7-11-13

Refractive Index Testing

- On Tuesday and Wednesday we tested about 70 tiles
- Casualties: 1 broken tile, some chipped corners and edges
- We compiled a graph of our data and the data that Nathaniel and Jullianna collected

Refractive Index Spread



Humidifier

- Completed:
 - The humidifier is built and working
- In the Process:
 - Humidity gauge is expected today
 - Test accuracy of gauge using a experiment involving salt water
- Goals for the End of the Week
 - Test the regularity of the humidity throughout the container
- Goals for the near future:
 - Research/experiment to find the time aerogel takes to reach saturation
 - Begin testing the aerogel at different humidities/times in the humidifier to measure the effect of humidity on the index of refraction

Humidity Testing

- Problems to Solve:
 - The container the we are using for the humidifier is not big enough to fit more than one tile.
 - Ideas:
 - Test one tile at a time
 - Stack tiles
 - Use broken tiles

Aerogel Thickness

- We are currently measuring the thickness of aerogel tiles by putting one between two steel plates and measuring with a caliper
- We then subtract the thickness of the plates from our measurement
- Pros:
 - We are confirming that all of the plates have similar thicknesses
- Cons:
 - The measurements depend on the pressure exerted to the plates
 - The tiles get weaker each time they are handled

Angle Measurements

- Using the swivel set up, we are going to test which incident angle creates the most refraction
- This will reduce uncertainty by making the measurements the most extreme
- We are going to use two methods to find this angle
 1. Mathematically: find the theoretical angle
 2. Experimentally: confirm that this is correct in reality