

Modelling Data

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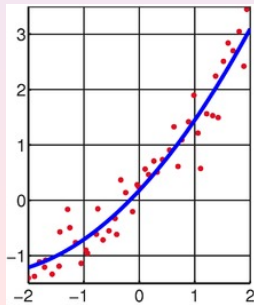
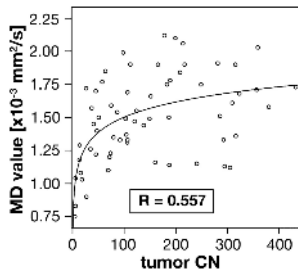
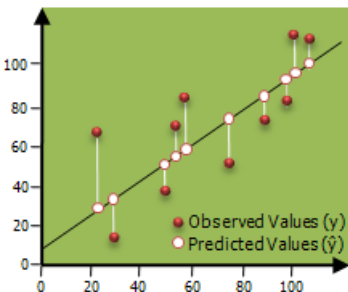


Choosing a Model

$$y = f(x) + \varepsilon$$

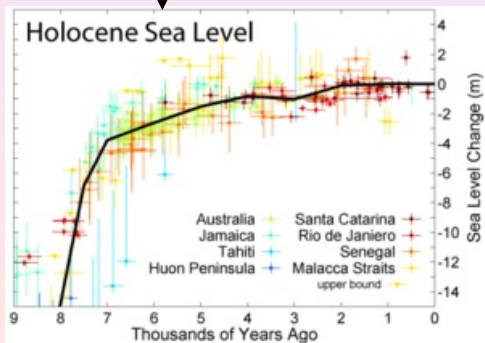
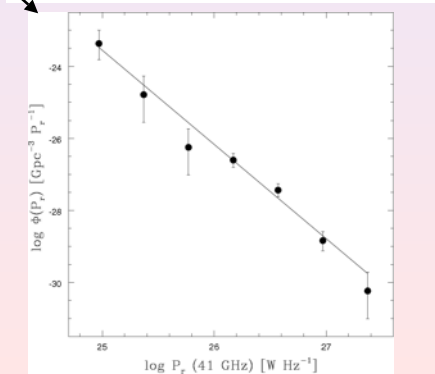
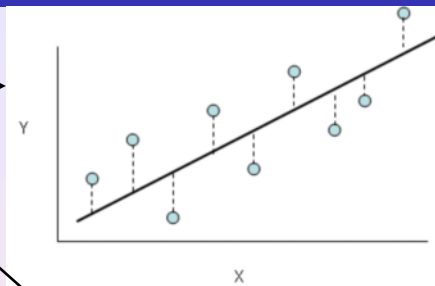
Model function

Error term



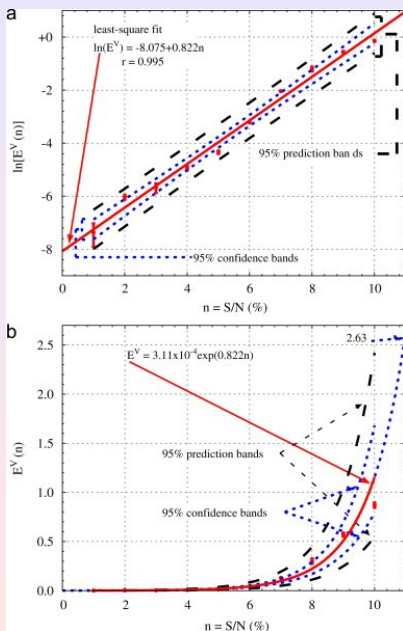
Fitting a Model

1. Least-squares
2. Weighted least-squares
3. Moving average



Goodness of fit

- Measured relative to your model
- If you have the wrong model, you might still get a good fit!
- Confidence estimates are quite different than prediction estimates



Exercise

- Come up with three models you've used in science classes.
- Identify functional (ideal) behavior.
- Identify main potential sources of error.

Botswana Watering Hole

Posted on [July 20, 2012](#) by [admin](#)

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Dale Easley writes: "I just returned from two weeks in Botswana with a group of students from the University of Dubuque where I am a geology professor. My X-treme Adventure Pants were my go-to outfit, as was my Explorer Shirt. In the attached photo, I am at Elephant Sands, a great spot to drink a beer and watch elephants after a night camping in the bush. We had elephants and hyenas around our tents near a watering hole."

Is this a good model?