Chapter 4 – Carbon Flux Data-Based Questions

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1. approximately 210 days of decreasing versus approximately 160 days of increasing;
2. lowest on day 135 which is in May; highest on day 290 which is in October;
3. high rates of photosynthesis in summer due to high insolation and warm temperatures;

leads to high net ecosystem photosynthesis (NEP);

low rates of photosynthesis in winter due to low insolation and low temperatures;

leads to low net ecosystem photosynthesis (NEP);

1. annual carbon flux is 17.5 t CO2 ha-1 (because this is the value reached at the end of the cumulative curve);

carbon flux is to the forest (because the value is positive)

1. they could capture more carbon dioxide and reduce the concentration in the atmosphere / reduce the greenhouse effect;

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1. direct and indirect measurements are very similar in the years when both data is available;
2. both trends rise between 1880 and 2008;

both trends rise most steeply from 1970/80 onwards;

temperature fluctuates more than carbon dioxide concentration;

1. a) 0.22 – (-0.19) = 0.41 oC b) 0.41 – (-0.21) = 0.62 oC
2. a) some possible explanations:

natural variability / solar variability;

variations in fossil fuel use;

local conditions at monitoring stations vary;

feedback systems from the earth triggered by warming;

b) the falls suggest that CO2 is not the only variable influencing temperature;

strong correlation both in figure 5 and in the figure 6 + 7