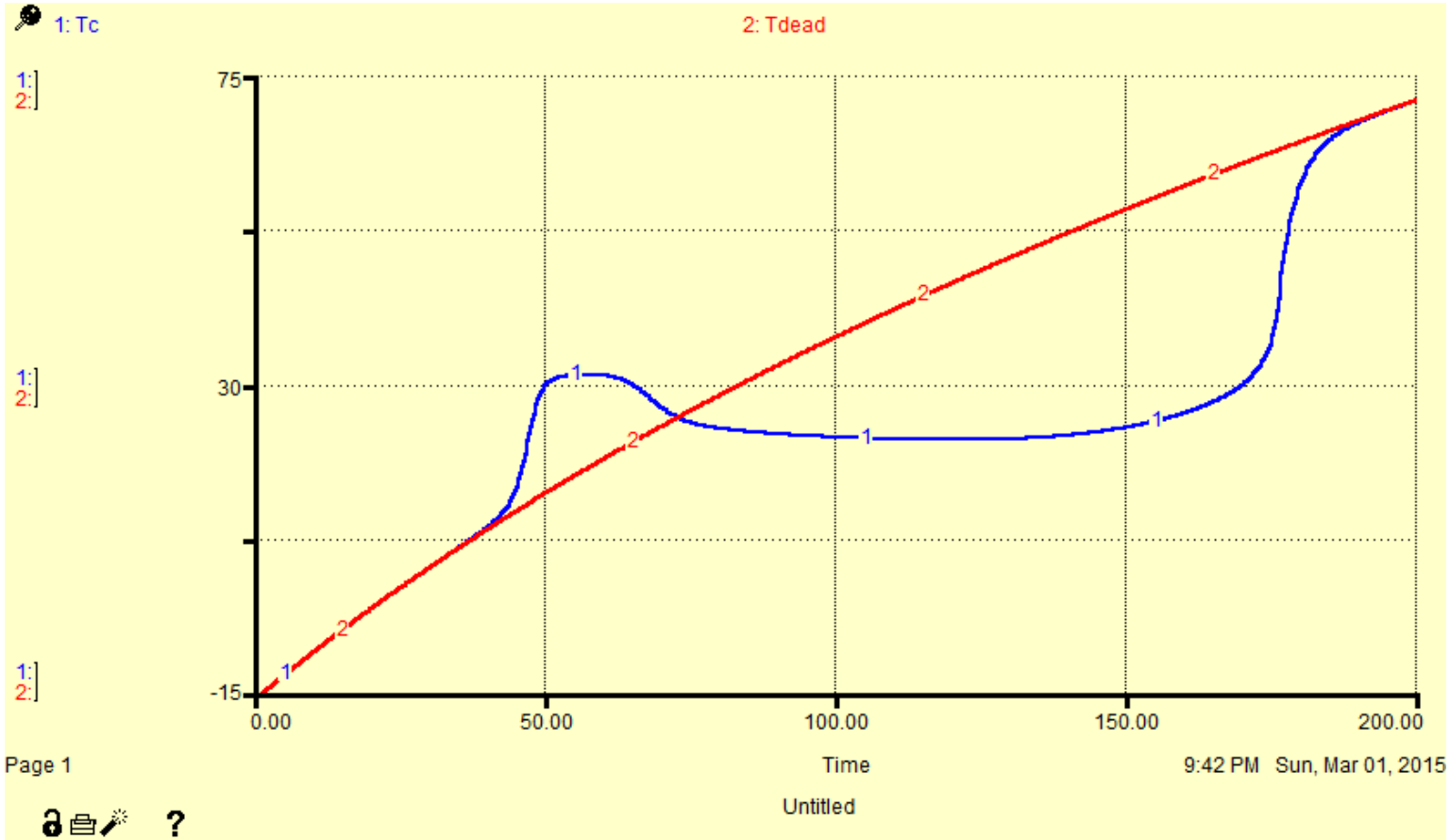
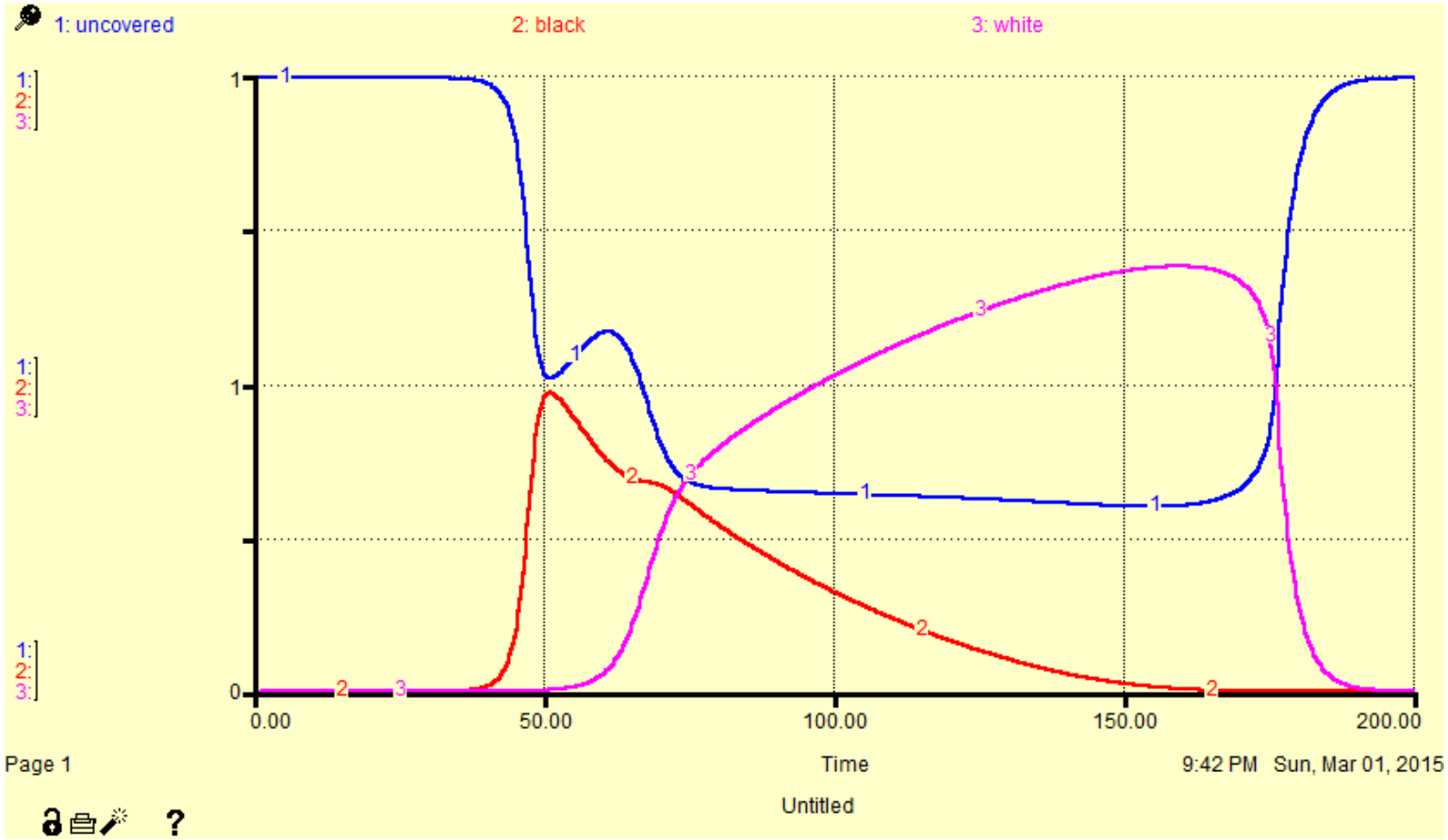
Daisyworld

1. Initial simulations



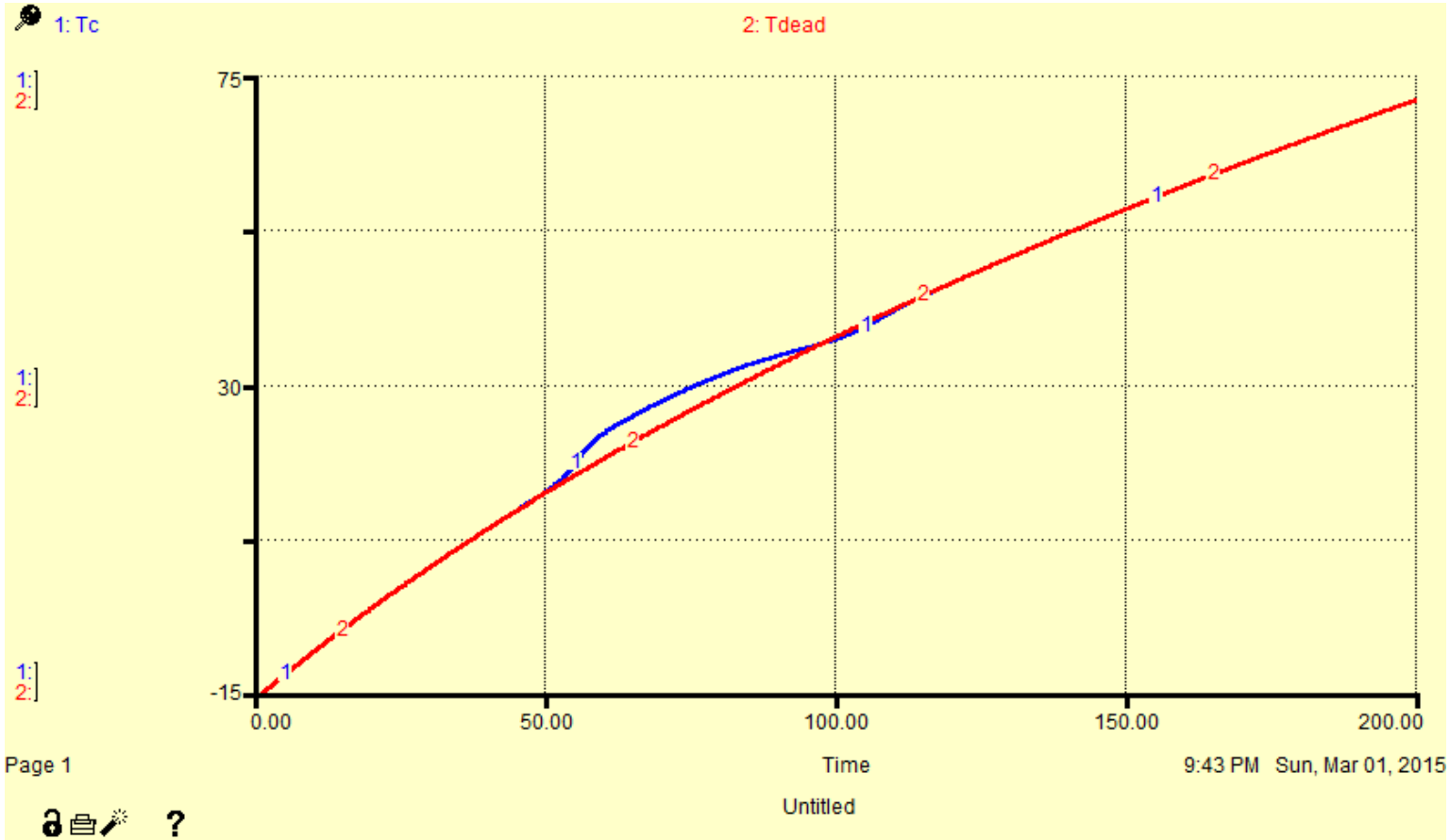
- Black daisies cause planet to warm up and make it more habitable early on
- White daises keep the planet cool and greatly extend the planet's life span

1. Initial simulations



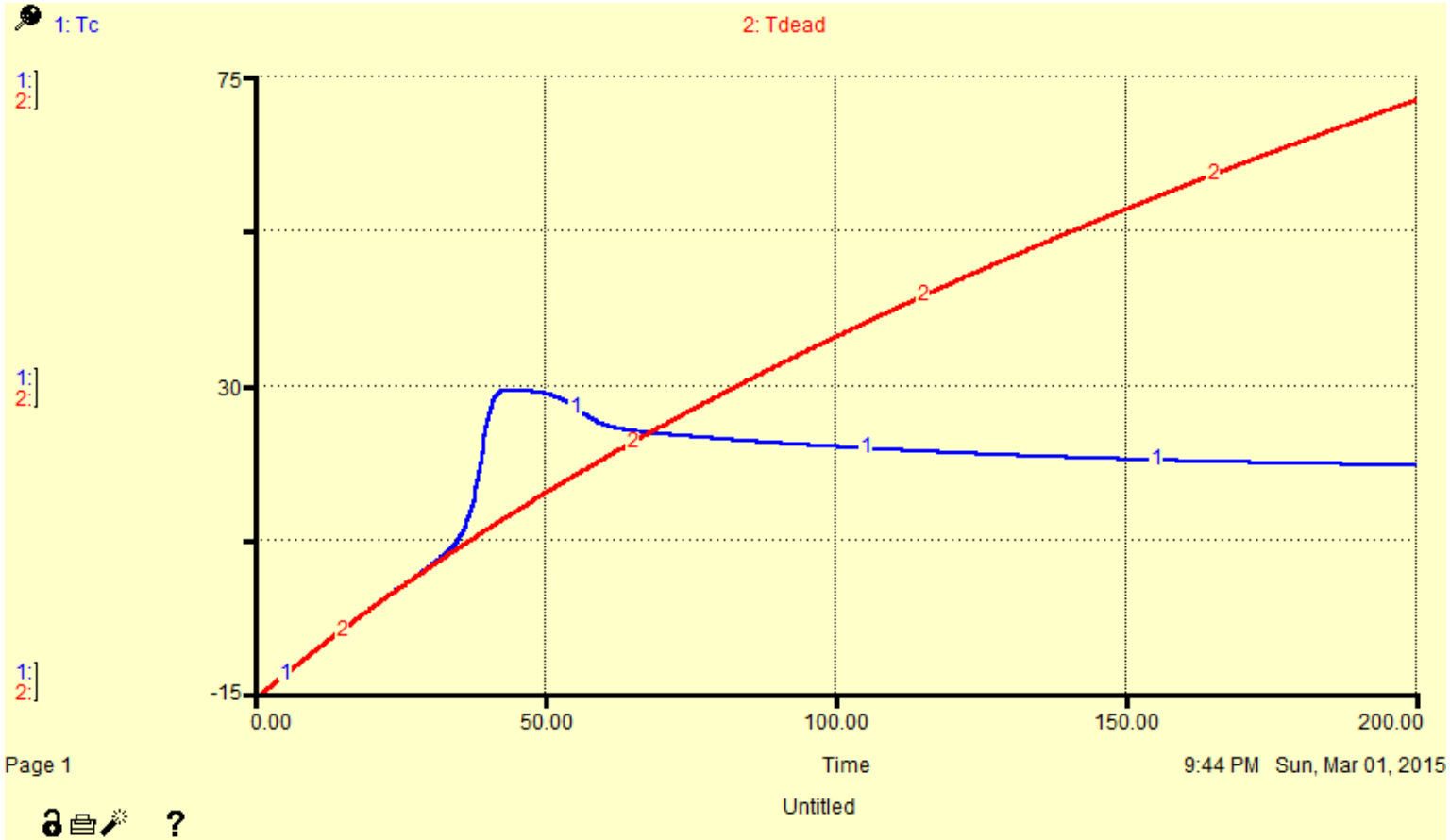
- Black daisies grow rapidly (unstable growth), and then gradually die off
- White daisies grow slowly, then rapidly die off

2. Varying the daisy albedos



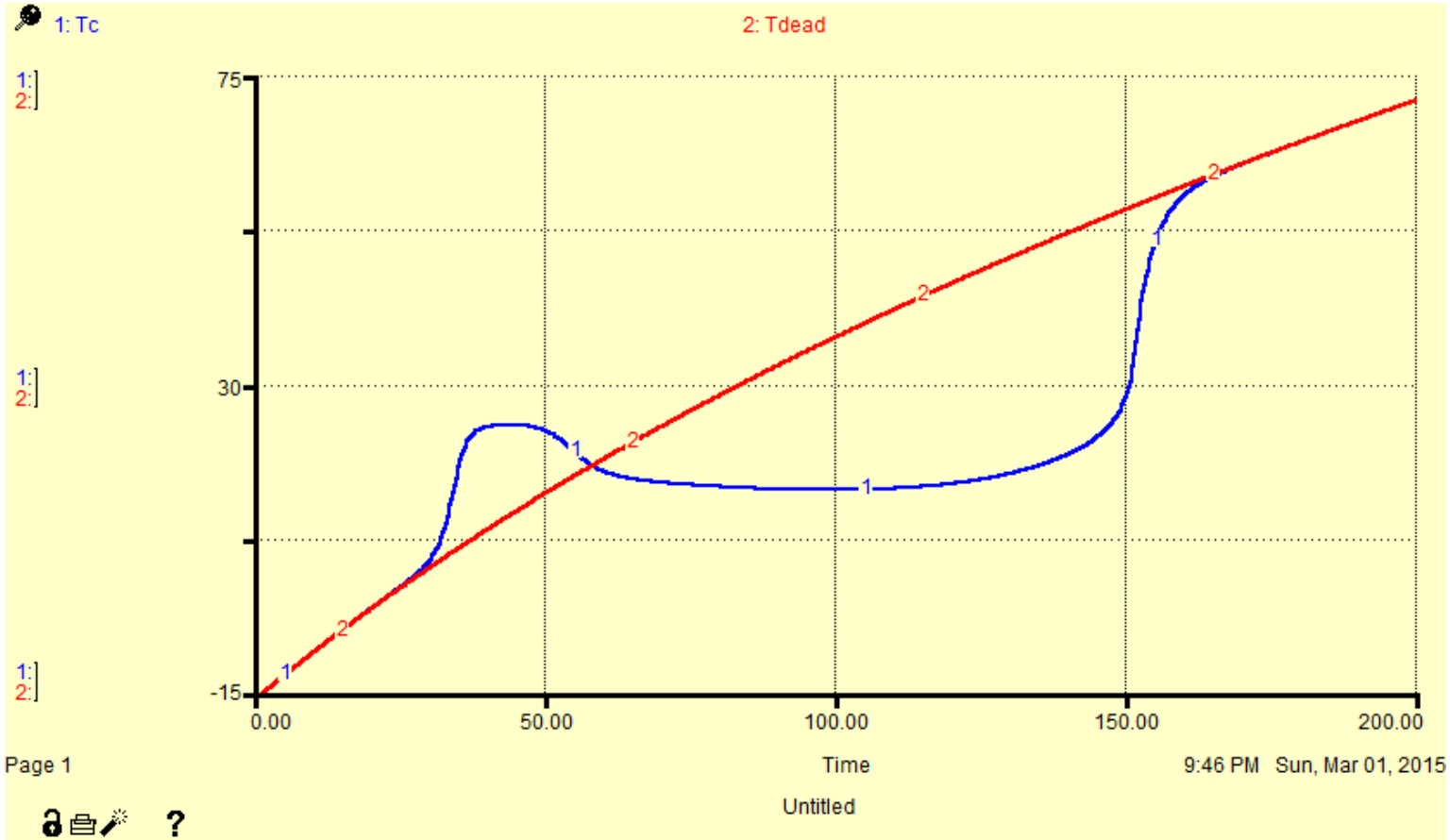
- Black albedo = 0.4; white albedo = 0.6
- Moderate albedos ⇒ reduced lifespan

2. Varying the daisy albedos



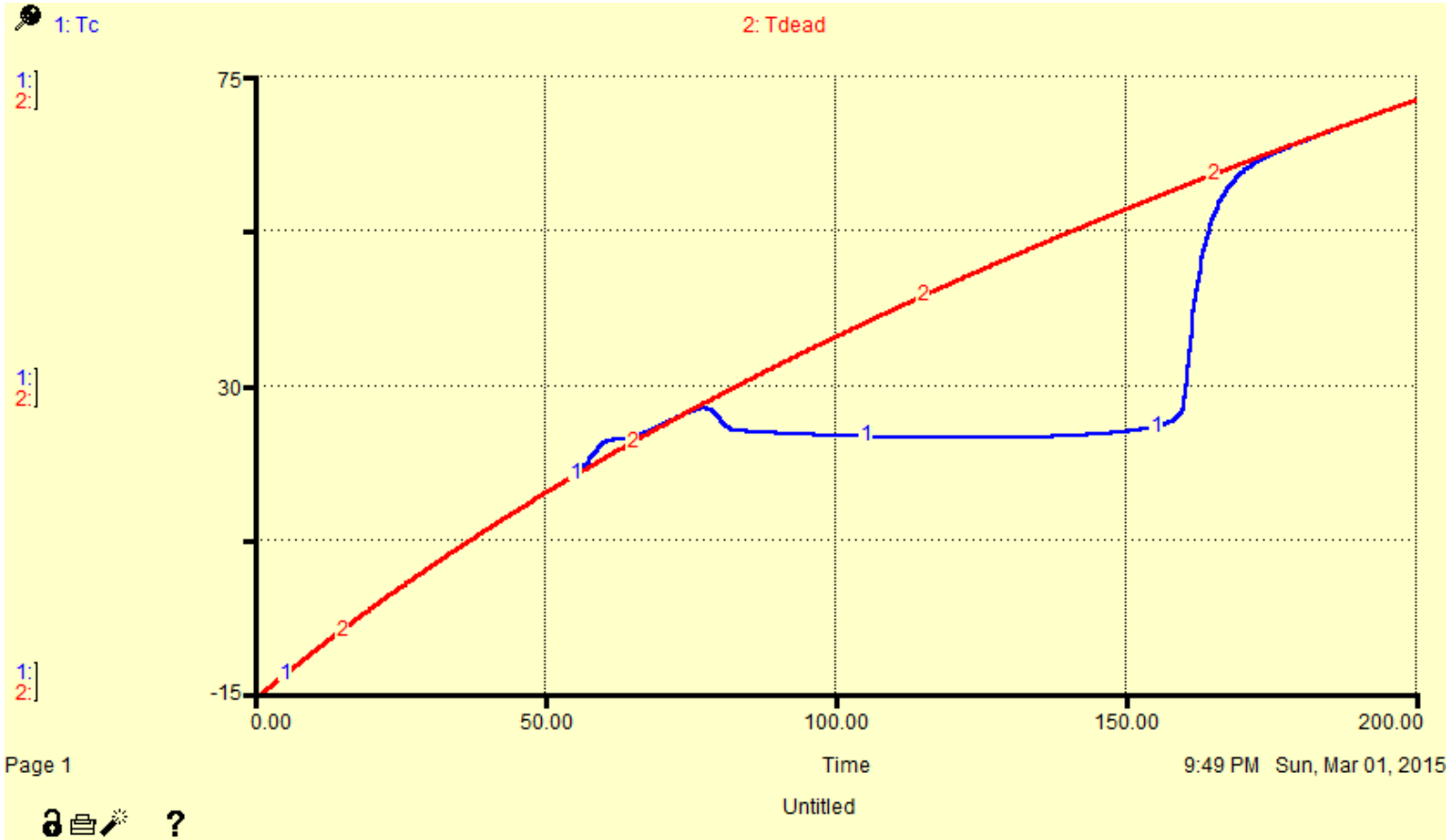
- Black albedo = 0.05; white albedo = 0.95
- Extreme albedos ⇒ increased lifespan

3. Varying the growth curves



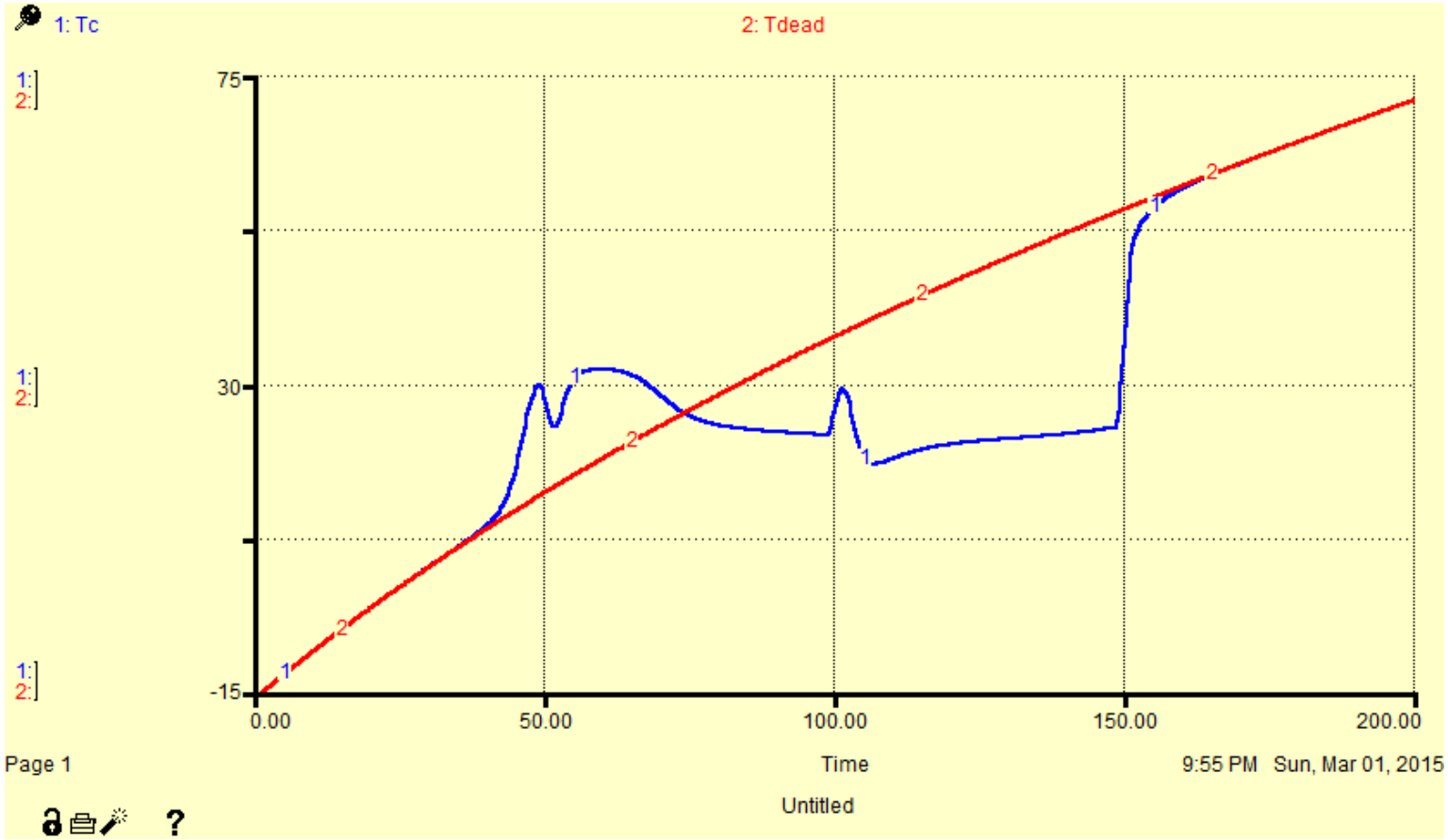
- Reduce optimal temperature for daisy growth
- Planet becomes habitable sooner, but daisies also die off sooner

3. Varying the growth curves



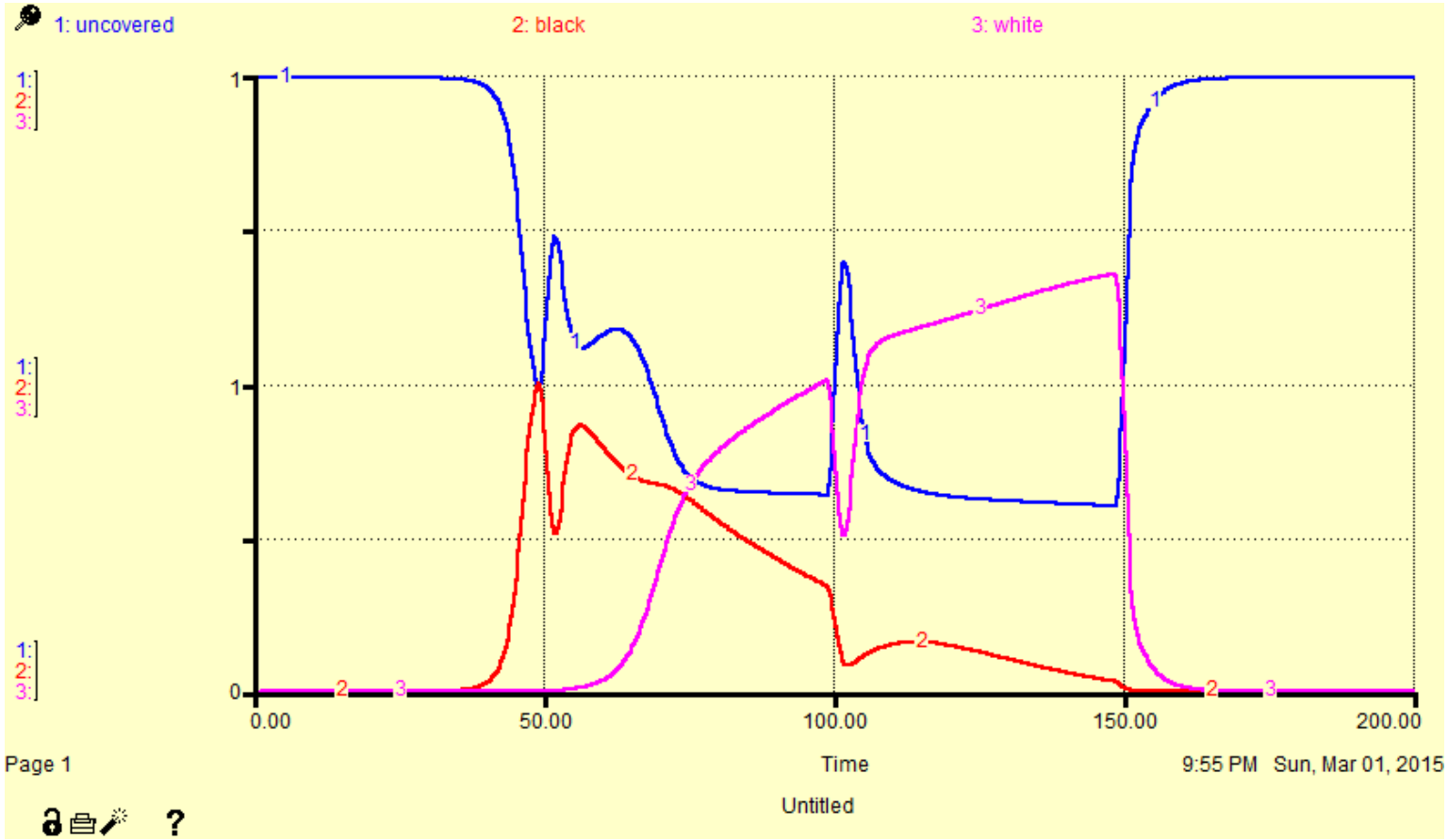
- Reduce temperature range over which daisies survive
- Feedbacks weaker, and planet lifespan is reduced

4. Plagues



- Had 3 similar plagues
- System recovered from the first two, but third one led to rapid extinction

4. Plagues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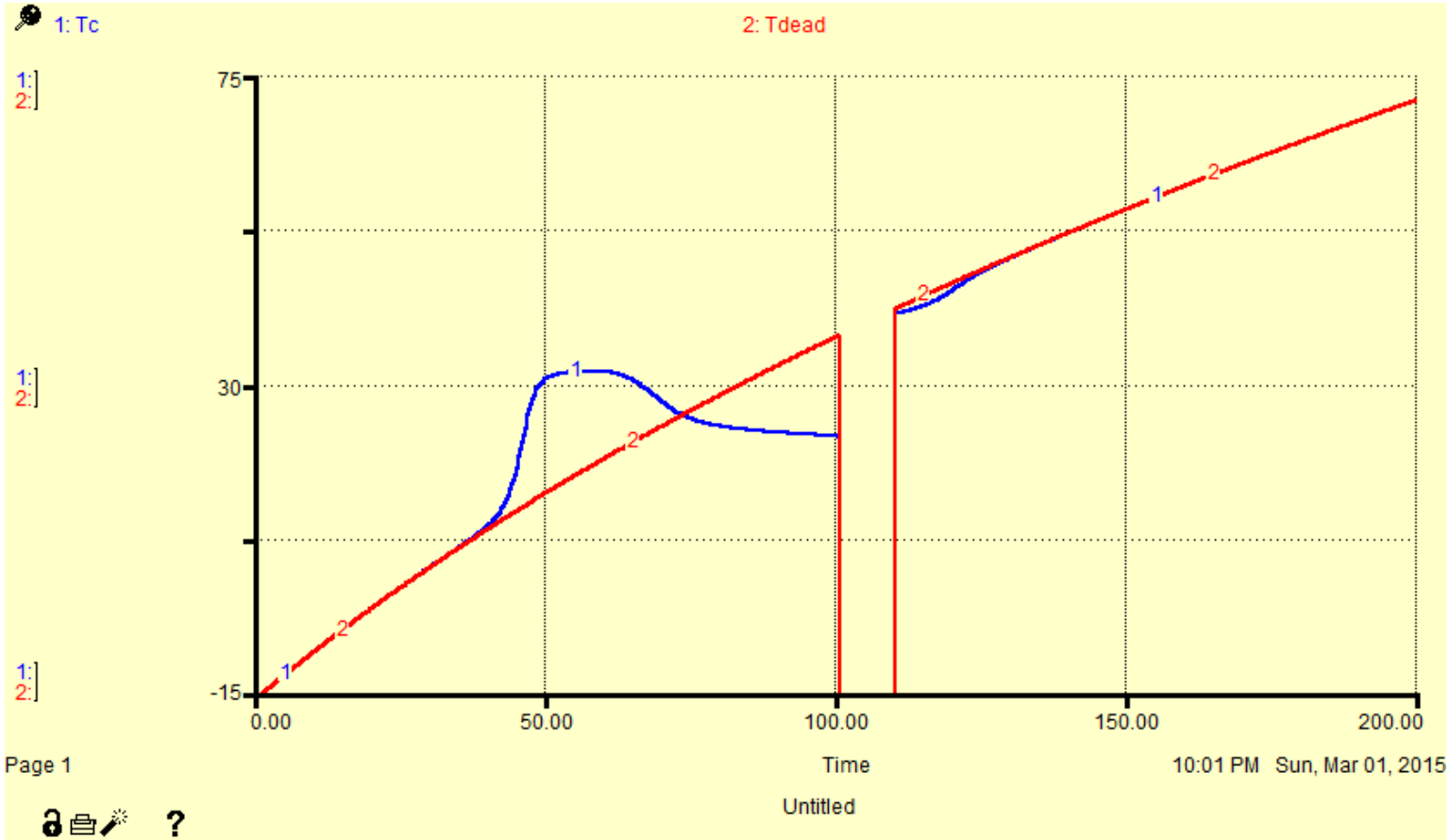
5. Volcanic eruption



- Larger perturbation than plagues
- Occurs at same time as second plague, but system is unable to recover