Simulation of pollen episodes associated with thunderstorms

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Introduction

Pollen are tiny, airborne particles released by plants as part of their reproductive process, and they can trigger allergic reactions in sensitive individuals. These allergens are typically released by trees, grasses, and weeds during specific seasons, primarily in spring and early summer. During this time, pollen counts tend to be higher, which increases the likelihood of allergic reactions such as hay fever (allergic rhinitis). Thunderstorms can trigger pollen episodes with extreme concentrations (Fig 1) but the underlying processes are less understood.

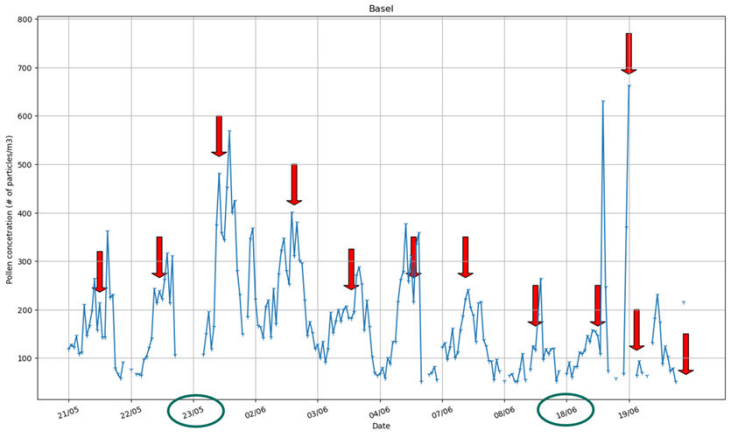

Fig 1: Pollen concentration around the onset of thunderstorms (red arrows) in Basel, CH.

Research question

What are the key factors driving pollen episodes coinciding with thunderstorms?

Working plan

Step 1: Literature review, learning ICON-ART and pollen processes

Step 2: Preparation and performing numerical experiments

Step 3: Validation of the results, writing of thesis

Requirements

Motivation, self-organization and team work

Programming: Python (basic), shell & unix (basic)