Unified Slope-Based Onset Detection (ver4)

1. Input CSV	Time, MGI, Temperature
2. Preprocessing	Smoothing, compute slope = d(MGI)/dt
3. First Onset (t_1)	Baseline + σ test, sustained slope rise
4. Additional Onsets (t_2, t_3…)	Local slope maxima, backtrack & separation criteria
5. Plateau Detection	Slope near zero for ≥300 s
6. Visualization	Plot MGI curve + red dashed onset lines

Processing Flow:
Input CSV → Preprocessing → Slope Derivative → t_1 Detection → t_2, t_3 Detection → Plateau Detection → Visualization

Algorithm Overview:
The method detects physical change points (onsets) in MGI–time data by analyzing the slope profile.

1. Compute derivative of MGI over time.
2. Identify first sustained increase (t_1) above baseline noise.
3. Locate later slope bursts (t_2, t_3…) using prominence criteria.
4. Define plateau when slope remains near zero.
5. Report onset times and temperatures, plot annotated MGI curve.

Advantages: automatic, reproducible, interpretable, and parameter-scalable.