



### Why

We want language for recording the elements of some set that appear at regular intervals of time.

### Definition

Let  $A$  be a set. An *observation sequence* (or *time series*) in  $A$  is a mapping  $a : \mathbf{Z} \rightarrow A$ .

If  $A = \mathbf{R}^d$  in which case we call  $a$  a *vector-valued observation sequence* or *vector-valued time series*.

### Examples

Examples include temperature readings, seismograph readings, sunspot numbers, export quantities, and so on.

### Time invariance

The most basic assumption we can make is that the observation sequence  $a$  exhibits some regularity over time. This assumption is naturally related to the assumption of time-invariance in physical laws.<sup>1</sup>

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<sup>1</sup>Future editions will expand on this discussion.



