Table 1: Geospatial predictor variables

| **Acronym** | **Definition1** | **Expected relationship with aspen** | **Description** | **Modeling notes** | **Grain**  **(m)** | **Units or range** | **Source** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Climate variables*** | | | | | | | |
| ADI | Annual dryness index: (DD5)0.5/MAP |  |  |  |  |  | Rehfeldt et al. (2009) |
| PRATIO | GSP/MAP |  |  |  |  |  |  |
| GSPDD5 | (GSP x DD5)/1000 |  |  |  |  |  |  |
| SDIMINDD0 | SDI x MINDD0 |  |  |  |  |  |  |
| GSPTD | (GSP x TDIFF)/100 |  |  |  |  |  |  |
| ADIMINDD0 | ADI x MINDD0 |  |  |  |  |  |  |
| MMAX | Mean maximum temperature in the warmest month |  |  |  |  |  |  |
| DD5MTCM | (DD5 x MTCM)/1000 |  |  |  |  |  |  |
| Our variables |  |  |  |  |  |  |  |
| **MAP** | Mean annual precipitation |  |  |  |  |  |  |
| **MAT** | Mean annual temperature |  |  |  |  |  |  |
| **MSP** | Mean summer (May-Sept) precipitation |  |  |  |  |  |  |
| **SHM** | Summer heat moisture index: MWMT/(MSP/1000) |  |  |  |  |  |  |
| **MWMT** | Mean temp at warmest month °C |  |  |  |  |  |  |
| **MCMT** | Mean temp at coldest month °C |  |  |  |  |  |  |
| **PPT\_sp** | Spring (March-May) precipitation (mm) |  |  |  |  |  |  |
| **PPT\_at** | Autumn (Sept-Nov) Precipitation (mm) |  |  |  |  |  |  |
| **TD** | Temperature difference, summer-winter temperature differential: MTWM-MTCM |  |  |  |  |  |  |
| **bFF** | The Julian date on which the frost free period begins |  |  |  |  |  |  |
| **RH** | Mean annual Relative Humidity (%) |  |  |  |  |  |  |
| **CMD** | Hargreave’s climate moisture index |  |  |  |  |  |  |
| **CMI** | Hogg’s Climate index |  |  |  |  |  |  |
| **DD\_0** | Degrees-days below 0°C(chiling degree days) |  |  |  |  |  |  |
| **DD5** | Degree-days above 5°C |  |  |  |  |  |  |

1 - DD5 = Degree-days >5°C; GSP = April-September precipitation; MAP = mean annual precipitation; MINDD0 = degree days <0°C based on the minimum temperature; MTCM= mean temperature in the coldest month; TDIFF = summer-winter temperature differential: MTWM-MTCM;

**References**

Rehfeldt, G. E., D. E. Ferguson, and N. L. Crookston. 2009. Aspen, climate, and sudden decline in western USA. Forest Ecology and Management 258:2353–2364.