# photobiologySun Version 0.3.3
## Catalogue of Solar Spectra

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## 1 Introduction

The plots show the solar spectral irradiance data included in the package.

```
library(ggplot2)
library(photobiology)
library(photobiologySun)
library(photobiologygg)
library(lubridate)
```

```
options(photobiology.plot.annotations =
        c("boxes", "labels", "colour.guide", "peaks", "title"))
```
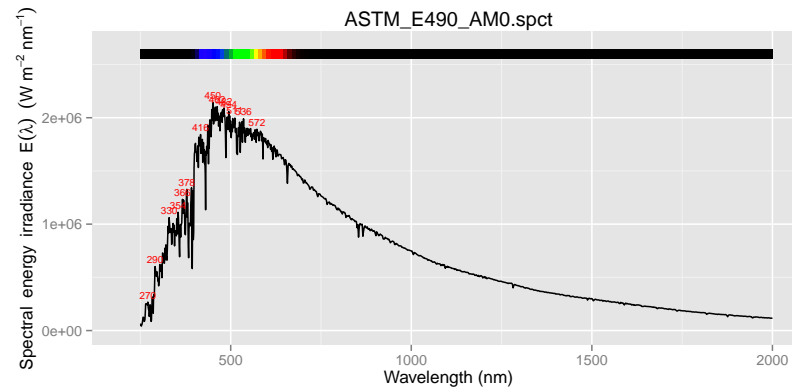
We define a function to do the actual plotting so as to not repeat code, and to make changes easier in the future.

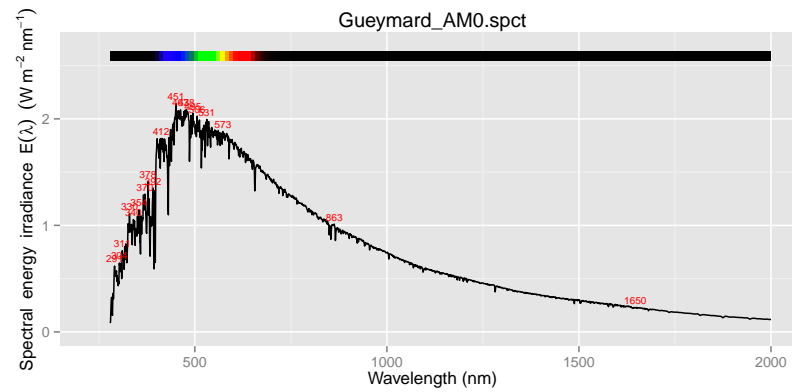## 2 Extraterrestrial solar spectra

```
plot(WMO_Wehrli_AM0.spct, range=c(250, 2000), w.band = NULL)
```
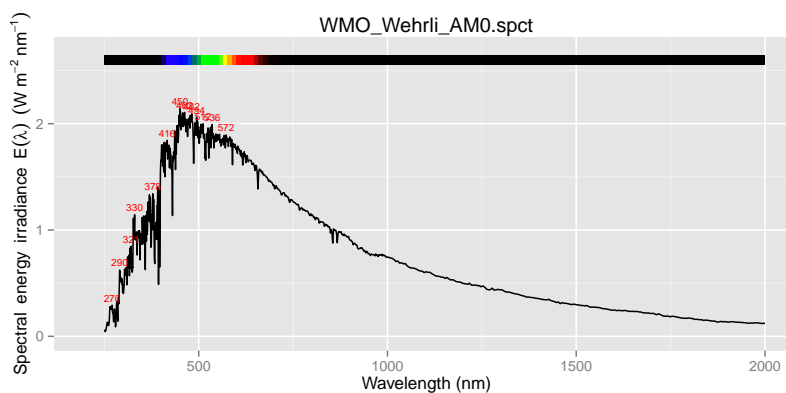
```
plot(ASTM_E490_AM0.spct, range=c(250, 2000), w.band = NULL)
```
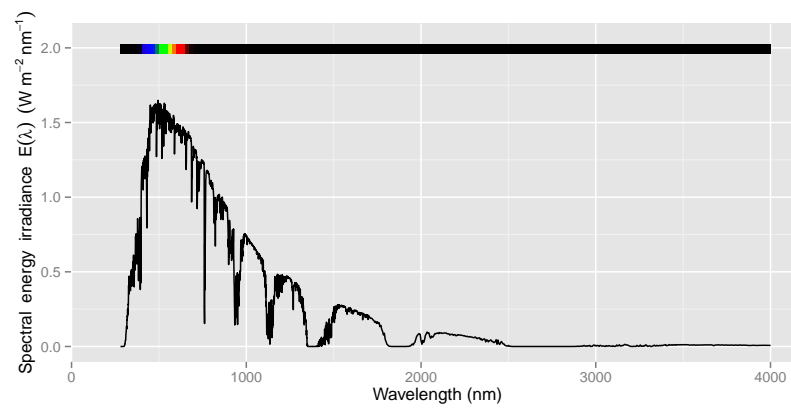


```
plot(Gueymard_AM0.spct, range=c(250, 2000), w.band = NULL)
```
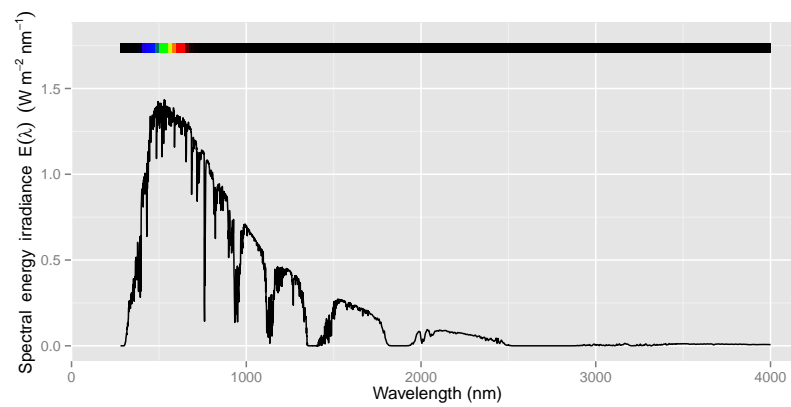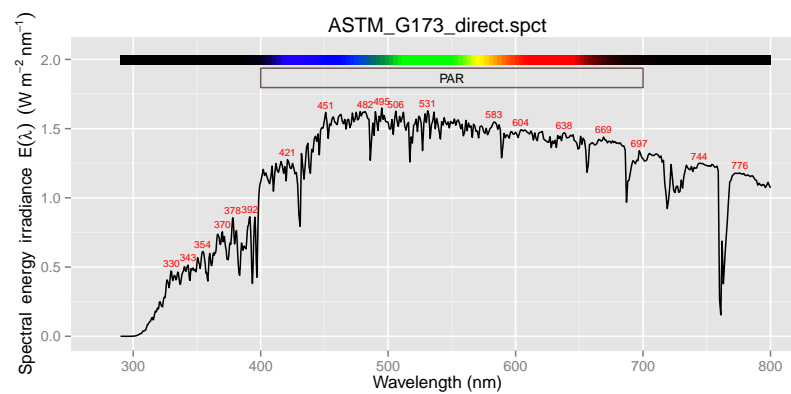


# 3 Standard terrestrial solar spectra

```
plot(ASTM_G173_direct.spct, annotations="colour.guide")
```
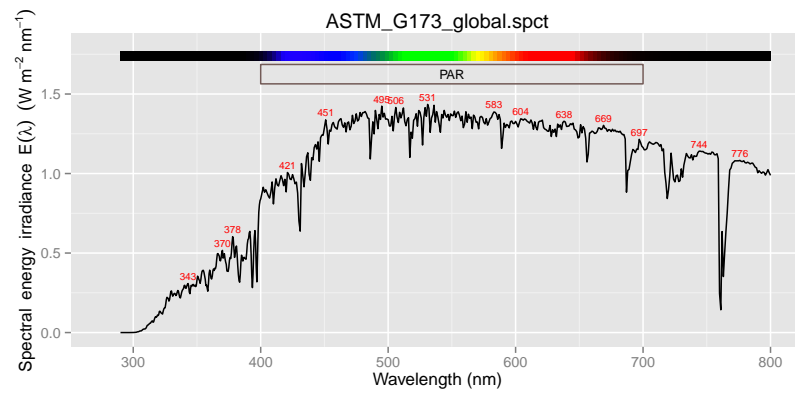
```
plot(ASTM_G173_global.spct, annotations="colour.guide")
```



```
plot(ASTM_G173_direct.spct, range=c(290, 800), w.band=PAR())
```
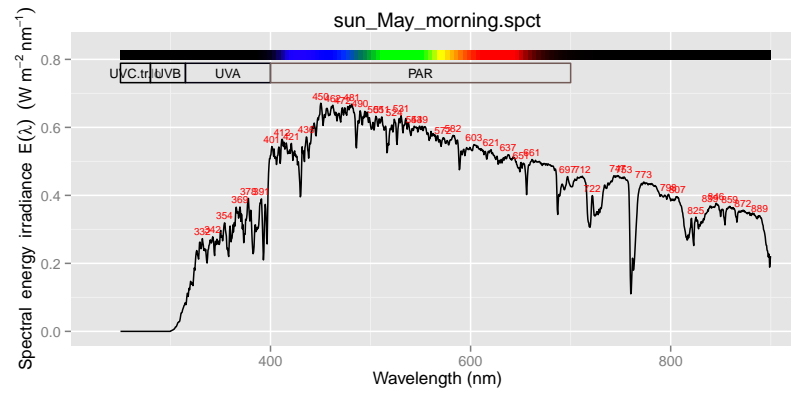
ASTM_G173_direct.spct

```
plot(ASTM_G173_global.spct, range=c(290, 800), w.band=PAR())
```
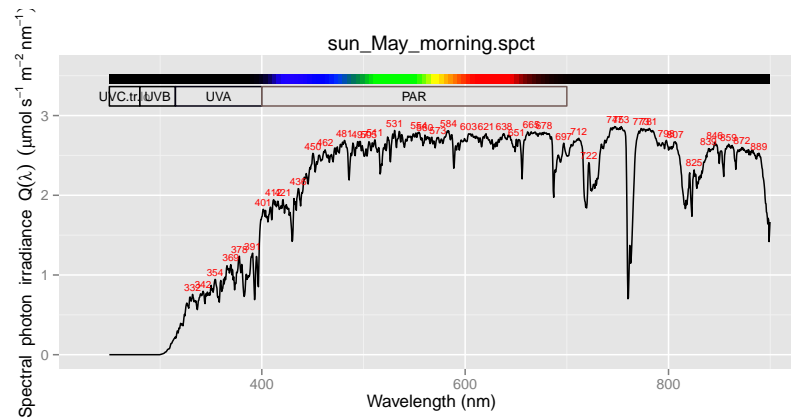


ASTM_G173_global.spct

# 4  Measured daylight spectra

```
plot(sun_May_morning.spct)
```



```
plot(sun_May_morning.spct, unit.out = "photon")
```

# 5 Simulated hourly daylight spectra

Late summer in Helsinki, modelled spectra using a radiation transfer model.

```
plot(subset(sun_hourly_august.spct, day(EEST) == 21 & hour(EEST) < 21),
     annotations = "colour.guide") +
  facet_wrap(~EEST, ncol = 3)
```