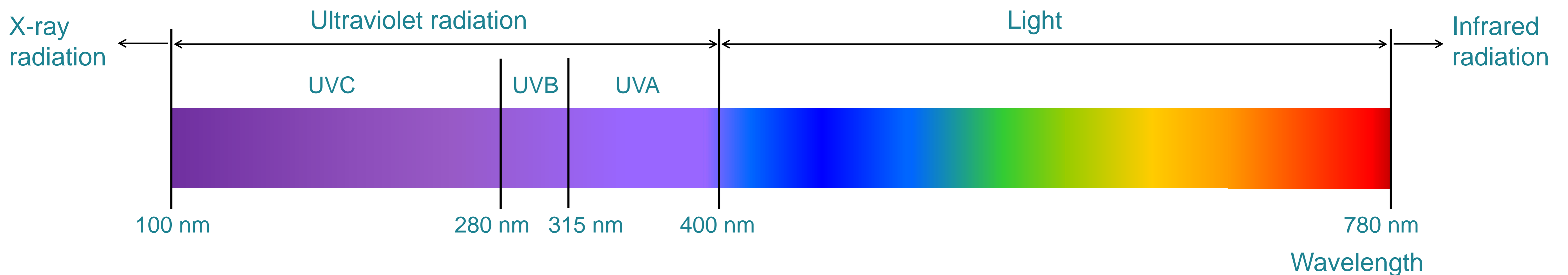


### Ultraviolet radiation (UV radiation)

- UV radiation is part of the electromagnetic spectrum and is located in the wavelength range between X-rays and visible optical radiation (light).



### Discovery of UV Radiation

- UV radiation was discovered in 1801 by Johann Wilhelm Ritter.
- He split the sun's radiation with a prism and used it to illuminate a sheet of paper painted over with silver chloride.
  - Silver chloride, which turns black under the influence of light, discoloured particularly strongly beyond the violet spectral range of light.
  - So there should be radiation in this area that is not visible. This part of the electromagnetic spectrum is now referred to as ultraviolet radiation.



Johann Wilhelm Ritter (1776-1810)

### Sources of UV Radiation

- Natural source sun
- Artificial sources, including mercury vapour lamps, fluorescent lamps, excimer lasers, UV light-emitting diodes, etc.
- Unintended side effect of welding processes

### Examples

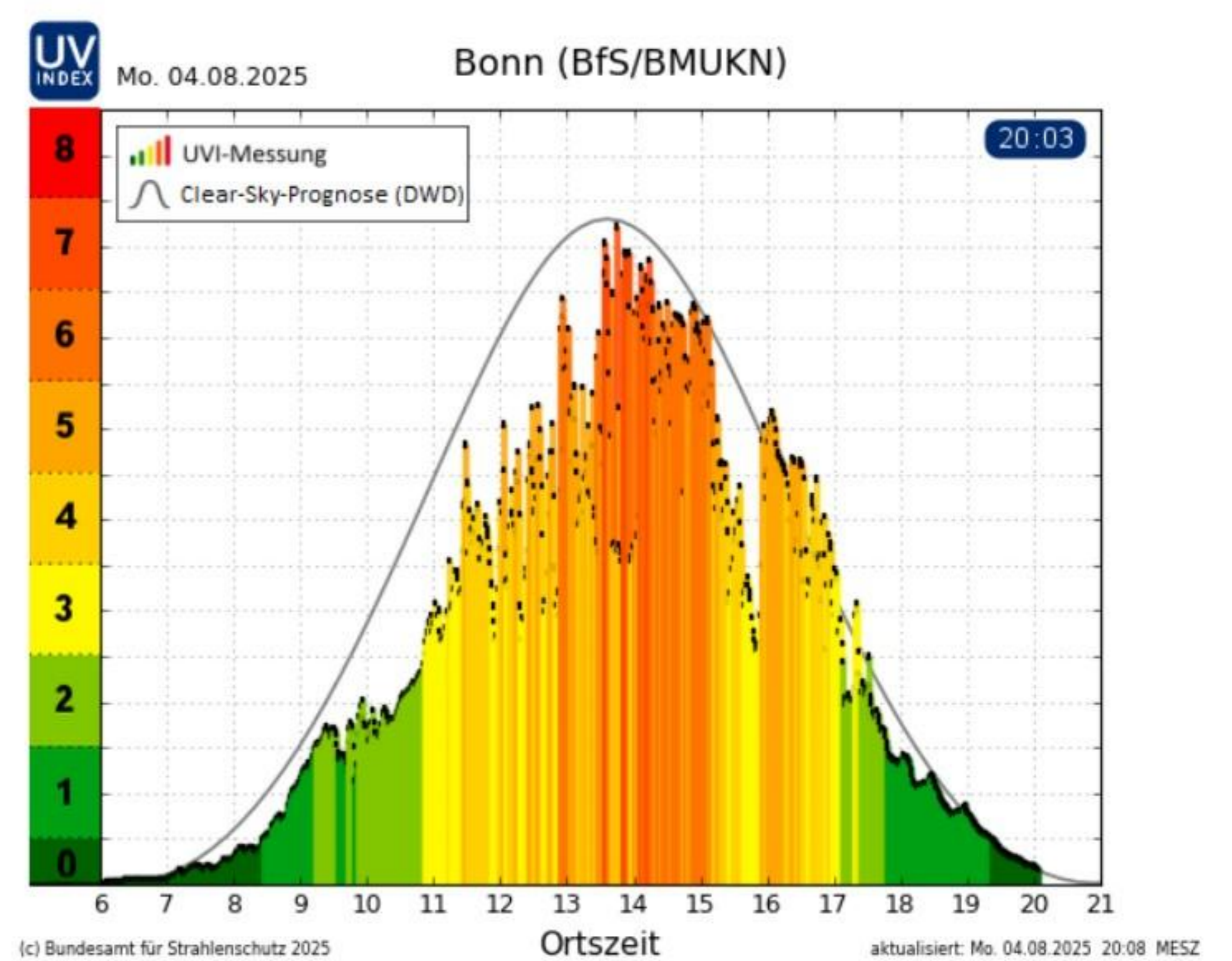
- Technical applications → Material hardening of plastics and coatings
- Medical applications → Corneal therapies, treatment of skin diseases
- Disinfection → Surface disinfection, room air disinfection, water treatment
- Research → Investigations with fluorescent dyes
- Cosmetics → Solariums (health risks!)

### Hazards

Site of action	Hazard	
	Acute (short term)	Chronic (long-term)
Eye	Keratitis and conjunctivitis	Lens opacity (Cataract)
Skin	UV erythema (sunburn)	Skin cancer Premature skin aging

### Protective Measures

- Protective measures against artificial UV radiation in the workplace → Compliance with exposure limits, technical, organisational and personal protective measures
- Protective measures against solar radiation for general public and at work → Avoid high UV solar radiation, wear clothing, sunglasses, headgear, sunscreen
- UV index as a guide for sun protection measures → The higher the UV index, the faster unprotected skin can get sunburned.



Example of a daily course of the UV index from the nationwide solar UV monitoring network (Source: Federal Office for Radiation Protection - BfS)