**Figure 3.** Image showing a thematic elevation map of the Western Lokris area, Central Greece (22.500 E to 23.000 E and 38.500 N to 38.800 N). The map was produced in ARC-GRID after importing the DEM intensity image from ERDAS Imagine. Elevations are grouped into twelve classes, each one shown with a different colour (see legend).

**Figure 4.** a) Image showing slope angle calculations for the region in Figure 3 (Western Lokris, Central Greece). The image is in raster format and its intensity varies proportionally with slope angle, that is bright areas correspond to high slopes. Also shown are four rectangular areas at the footwall of the Kammena Vourla Fault Segment, selected for statistical analysis. Text refers to population centres of the area. Notice the "grainy" texture at high elevations (compare with figure 3), resulted from the poor quality DEM data at these regions. b) The frequency distribution of slope angles at four areas in the footwall of the Kammena Vourla Fault Segment. Vertical axes numbers represent frequency of slope angle occurrence within each of the footwall area.
Fig. 10: Geocoded intensity image of McClary and Northeast glacier, dated 15th of October with the determined flow lines. Flow line 4 starts at The Amphitheatre on the Plateau of the Antarctic Peninsula and ends at the ice cliff of Marguerite Bay between Base San Martin and Stonington Island.

Fig. 11: Phase values caused by glacier velocity with flow lines (1 - 5) and 50m-contour lines. For further calculations we used the profile of flow line 4.

Along the altitudinal profil of flow line 4 we projected the displacement in flow direction parallel to the glacier surface.
Fig. 4: Kriging predictor of the gelbstoff distribution in the German Bight. Excitation at 308 nm, emission at 440 nm. Survey on Sept 13th., 1995 (see Fig 2).

Fig. 7: Kriging predictor of the gelbstoff distribution derived with transformed data.

Fig. 5: Uncertainty of the distribution of gelbstoff fluorescence shown in Fig. 4.

Fig. 8: Uncertainty of the distribution of gelbstoff fluorescence shown in Fig. 7.
Fig. 10: Kriging predictor of the distribution of chlorophyll fluorescence in the German Bight, relative units. Excitation at 308 nm, emission at 685 nm. Survey on Sept 13th, 1995 (see Fig 2).

Fig. 11: Kriging predictor of the distribution of the attenuation coefficient (308 nm+344 nm)/2, derived by inversion of the water Raman scatter signal at 344 nm with excitation at 308 nm, in relative units.

Fig. 12: Kriging predictor (colour) and uncertainty (brightness) of the gelbstoff distribution in the Canary Islands region, measured on June 3rd-6th, 1995. Dotted lines: flight tracks.
Fig. 6: Input/output characteristic of the logarithmic amplifiers. The crosses were obtained by calibration of the amplifier. The straight line is a fit used to interpret the lidar signals measured on board ship.

Fig. 7: Examples of signals degraded with noise, measured during the first test in the cruise ANT XI/1, October 1993. The curves display PMT signals from the given detection channels after logarithmic amplification, as an average of 128 single pulses. The chlorophyll fluorescence signal is much shorter than the water Raman return because of the higher attenuation coefficient, and hence lower lidar penetration depth, at the emission wavelengths of chlorophyll fluorescence. The position of the leading edge of both signals on the abscissa is arbitrary.

Fig. 8: Examples of signals measured during ANT XI/1, Dec. 1996. Better shielding against electromagnetic interference has led to a much lower noise level, thus allowing to use the logamp output over its entire dynamic range. The shape of the trailing edge of the signal is again due to the different attenuation coefficients at the given wavelengths.

Fig. 9: To suppress noisy components in the signals, their bandshape is checked for plausibility. Noise at times before the leading edge is set to zero. The same is done at the end of the trailing edge, starting at a time where the signal is no longer decreasing.
Fig. 15: Same as in Fig. 12, but depth profiles of chlorophyll fluorescence at 685 nm in arbitrary units, normalized to water Raman scattering.

Fig. 16: Comparison of in situ profiles of chlorophyll fluorescence (bars from 10 to 25 m depth) and lidar depth profiles (thicker bars with variable maximum depth).

Fig. 12: Sum of the attenuation coefficients $c(355\,\text{nm}) + c(405\,\text{nm})$ given in $\text{m}^{-1}$, measured with lidar along a transect between stations 100 and 108 on latitude 54°30′W (Figs. 9 and 10). Positions of stations are marked, where depth profiles were taken with in situ probes. The unsteady behaviour of the data at depth is due to the variable penetration depth of the lidar, and hence reflects the local values of the attenuation coefficient.