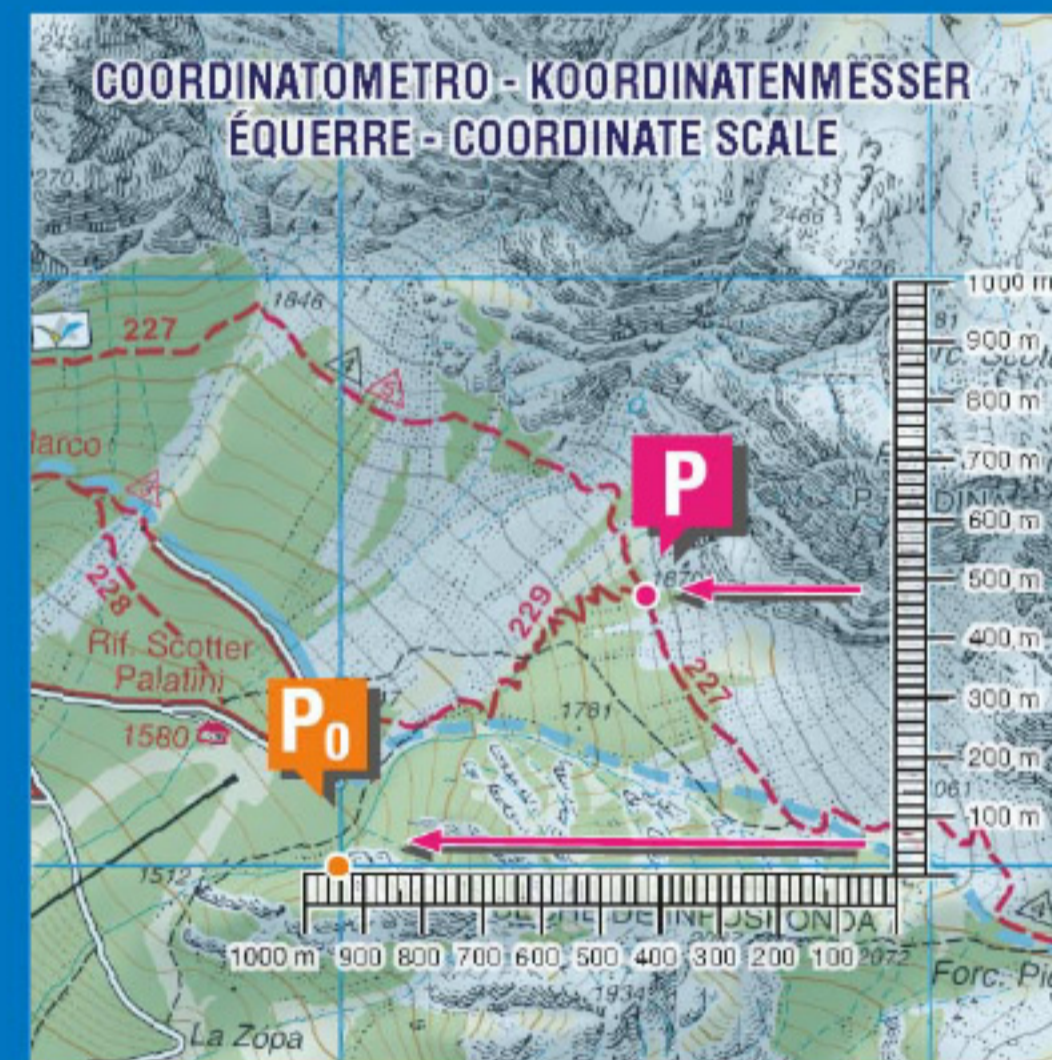
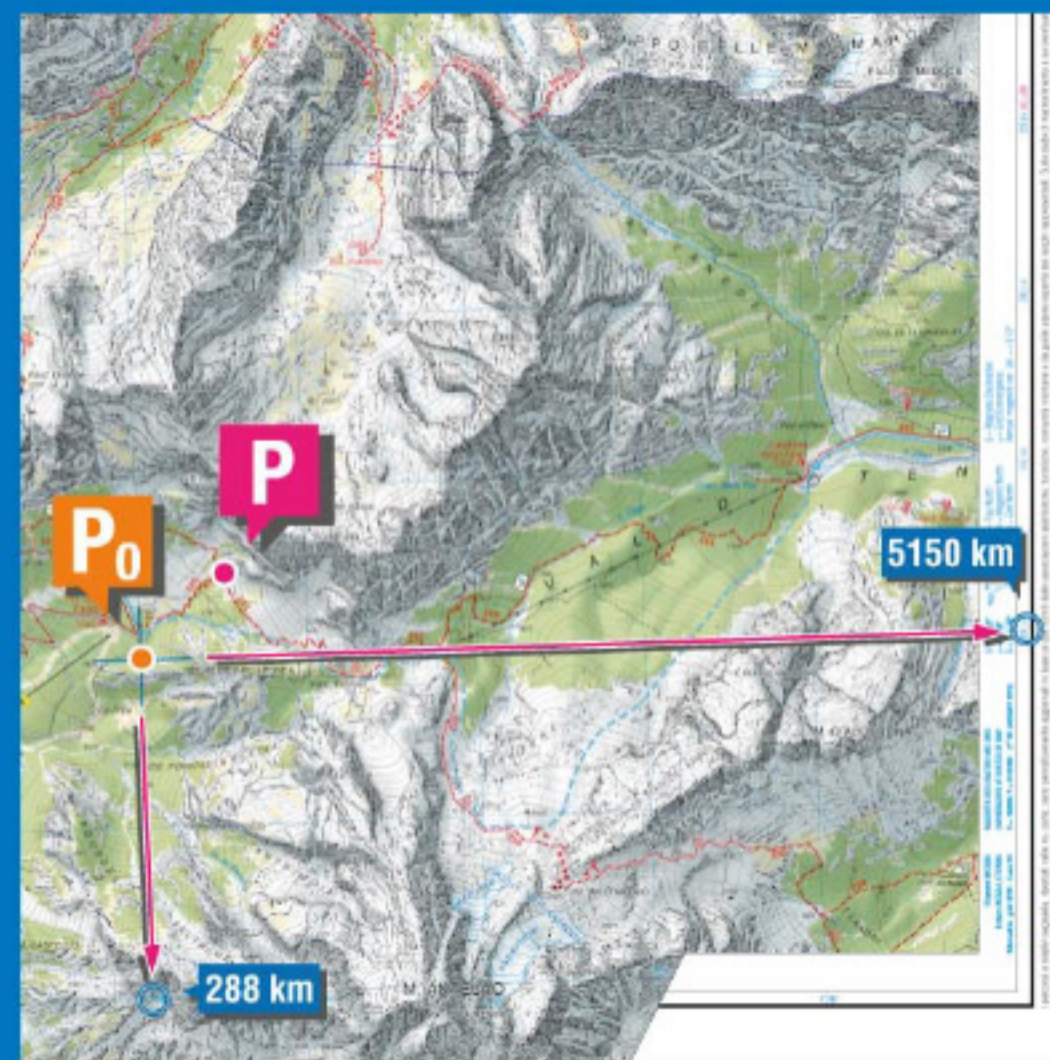


## USO DEL COORDINATOMETRO

Determinazione delle coordinate UTM (WGS84)  
di un punto P sulla carta



1

Individuare in carta il punto P, del quale si vogliono determinare le coordinate, e il punto P<sub>0</sub>, vertice in basso a sinistra del quadrato del reticolo in cui insiste il punto P.

2

Leggere sul margine della carta le coordinate chilometriche del punto P<sub>0</sub>:

$$E(x) = 288,000 \text{ km}$$

$$N(y) = 5150,000 \text{ km}$$

3

Posizionare il coordinatometro (stampato sulla busta trasparente della carta) con la base sovrapposta alla linea di base del quadrato del reticolo in cui insiste il punto P e farlo scorrere verso sinistra, mantenendolo allineato, fino a che la linea verticale del coordinatometro tocca il punto del quale si vogliono determinare le coordinate.

4

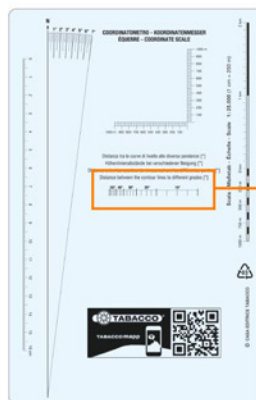
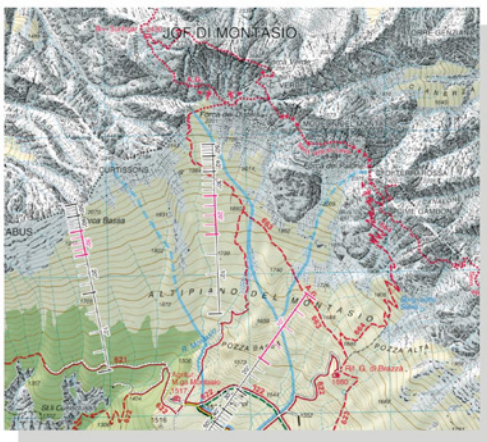
Misurare i valori in metri delle coordinate metriche misurate con il coordinatometro.

Le coordinate UTM del punto P sono quindi:

$$(E) x = 288000 \text{ m} + 680 \text{ m} = 288680 \text{ m}$$

$$(N) y = 5150000 \text{ m} + 490 \text{ m} = 5150490 \text{ m}$$

## STIMA DELL'ACCLIVITÀ DEL TERRENO



Busta



1

Sulla carta topografica, sovrapporre, ortogonalmente alle curve di livello, la scala stampata sulla busta, in corrispondenza del punto nei dintorni del quale si vuole valutare la pendenza.

2

Stimare con la scala il range dell'intervallo fra due curve di livello principali contigue (100 m) e leggere il corrispondente valore della pendenza in gradi.

## INFORMAZIONI RIPORTATE A MARGINE CARTA

### Sistema Cartografico

Ellissoide: WGS84  
 Sistema di riferimento: WGS84, ETRS 89  
 Reticolo chilometrico: UTM  
 Fusi UTM: 32, 33

### Declinazione magnetica e convergenza del reticolo al centro della carta

N = Nord geografico  
 Nm = Nord magnetico  
 Ng = Nord reticolo  
 $\delta$  (delta) = declinazione magnetica  
 $\gamma$  (gamma) = convergenza reticolo  
 $\Delta\delta$  = variazione annuale della declinazione magnetica

## ORIENTAMENTO DELLA CARTA

A margine carta sono riportati i valori della declinazione magnetica al centro della carta e l'angolo tra il Nord magnetico, il Nord del reticolo e il Nord Geografico. Il valore dell'angolo tra il Nord del reticolo e il Nord magnetico permette di orientare con precisione la carta con la bussola e di effettuare con semplicità i calcoli di rotta. I valori degli angoli sono riportati in gradi sessa-decimali per semplificare i calcoli.

Ellissoide WGS84  
 Sistema di riferimento WGS84, ETRS89  
 Reticolo chilometrico UTM - Fuso 33

DECLINAZIONE MAGNETICA E CONVERGENZA DEL RETICOLO AL CENTRO CARTA  
 X = 850000, Y = 5154000 (1° GENNAIO 2017)

$\delta = +3,37^\circ$   
 $\gamma = -1,05^\circ$   
 $\delta - \gamma = 4,42^\circ$

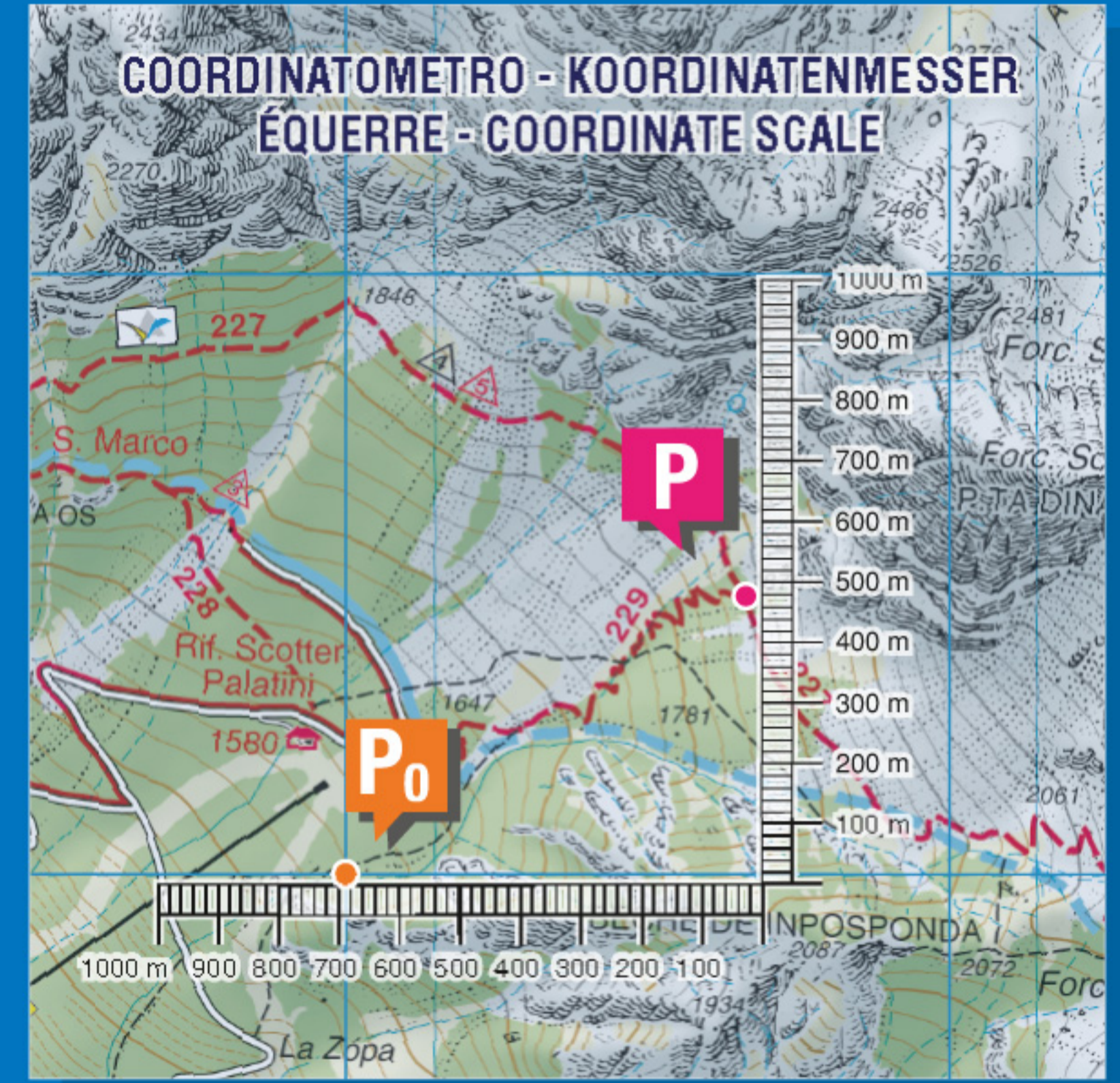
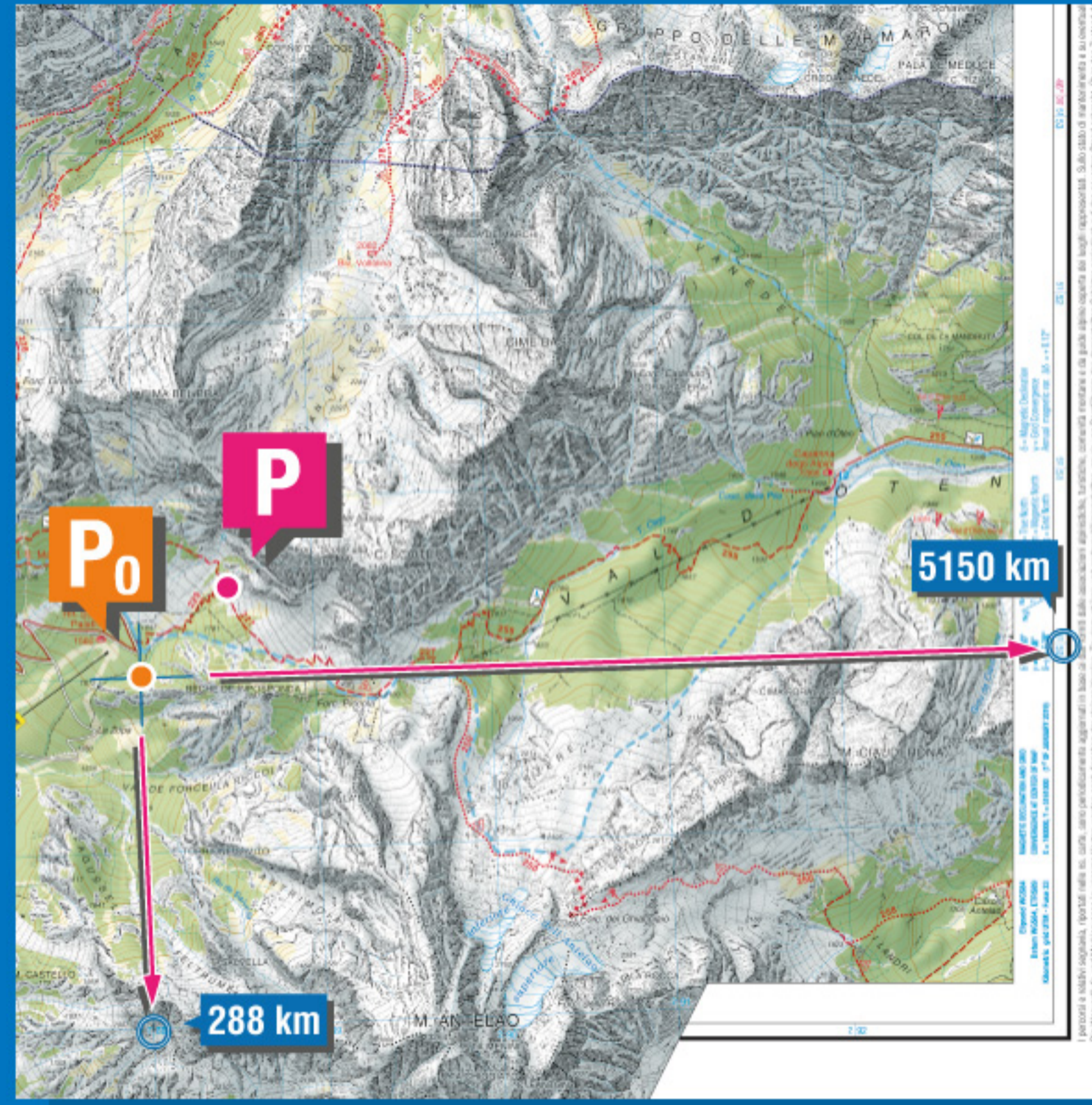
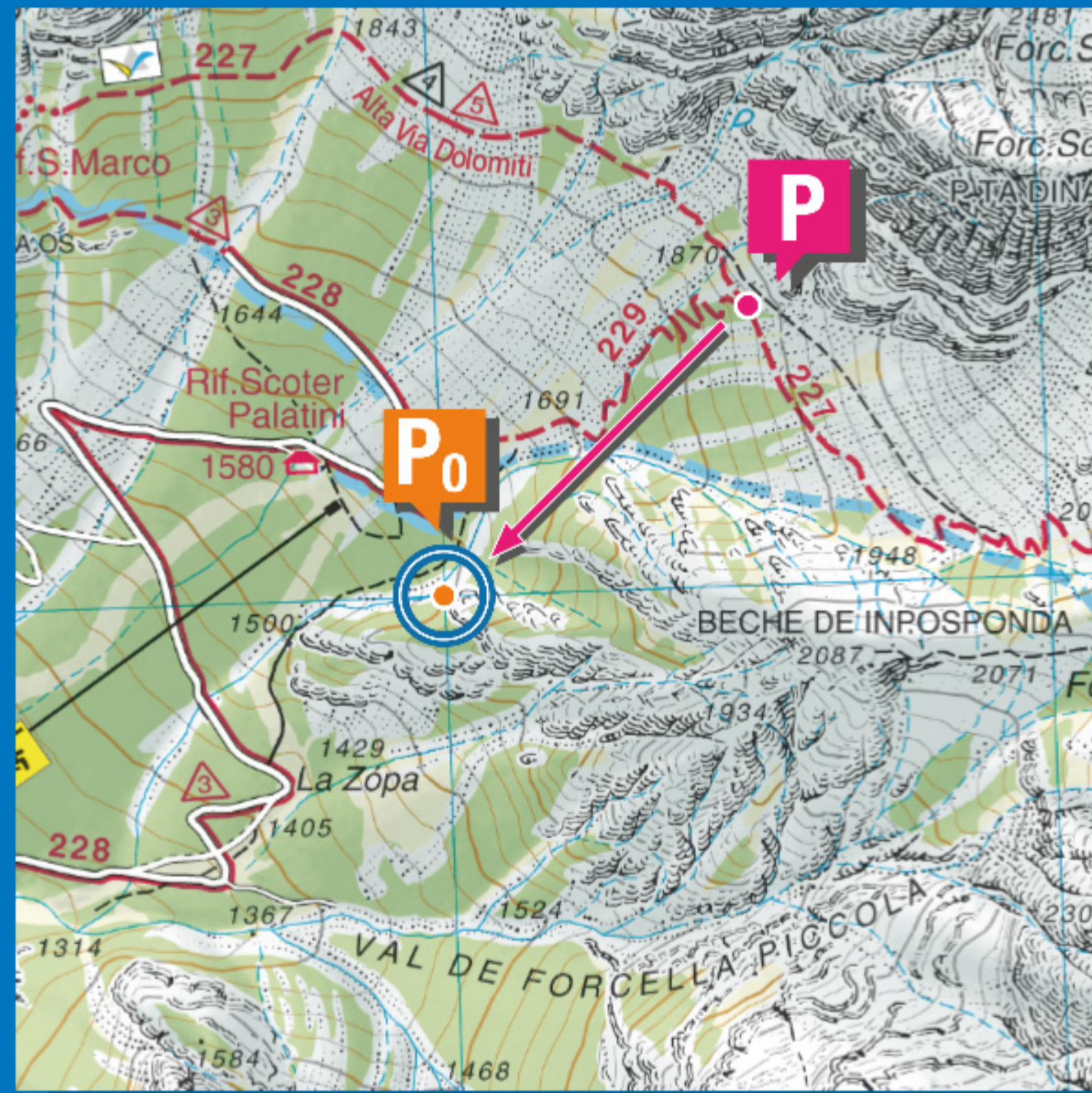


N = Nord Geografico  
 Nm = Nord Magnetico  
 Ng = Nord Reticolo

$\delta$  = Declinazione magnetica  
 $\gamma$  = Convergenza reticolo  
 $\Delta\delta$  annuale = + 0.12°

## USE OF THE GRID REFERENCE TOOL

Determining the UTM coordinates (WGS84)  
of a point on the map



1

On the map, identify point P, for which you wish to determine the coordinates, and point P0, the lower left corner of the square of the grid in which point P is located.

2

Look at the edge of the map to read the kilometre coordinates of point P0:

$$E (x) = 288,000 \text{ km}$$

$$N (y) = 5150,000 \text{ km}$$

3

Position the grid reference tool (printed on the transparent sleeve of the map) overlaying the base line on the lower line of the grid square in which point P is located, and slide it to the left, keeping it aligned with the grid, until the vertical line of the grid reference tool is touching the point for which you wish to determine the coordinates.

4

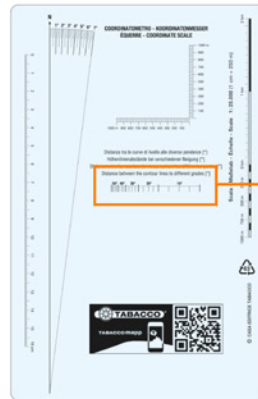
Measure the values of the coordinates E (x) and N (y) of point P in metres relative to point P0 (NB: with the grid reference tool it is possible to assess the distance with an error margin of around 10-20 m).

The UTM coordinates of point P are thus:

$$(E) x = 288000 \text{ m} + 680 \text{ m} = 288680 \text{ m}$$

$$(N) y = 5150000 \text{ m} + 490 \text{ m} = 5150490 \text{ m}$$

## ESTIMATING THE GRADIENT OF THE LAND



Envelope



1

Lay the sleeve on the topographic map, so that the printed scale is at right angles to the contour lines, over the point around which you wish to estimate the gradient.

2

Use the scale to estimate the range of the interval between the two adjacent primary contour lines (100 m) and read the corresponding value of the gradient in degrees.

## INFORMATION SUPPLIED ON THE EDGE OF THE MAP

### Cartographic Method

Ellipsoid: WGS84  
 Geodetic datum: WGS84, ETRS 89  
 Kilometric grid: UTM  
 Fusi UTM: 32, 33

### Magnetic declination and grid convergence at center of map

N = true north  
 Nm = magnetic north  
 Ng = grid north  
 $\delta$  (delta) = magnetic declination  
 $\gamma$  (gamma) = grid convergence  
 $\Delta\delta$  = annual variation of magnetic declination

## ORIENTATION OF THE MAP

The edge of the map shows the magnetic declination at the centre of the map, and the angle between magnetic north, grid north and true north. The value of the angle between grid north and magnetic north enables the user to orientate the map precisely using a compass, and to work out routes with greater ease. The values of the angles are given in decimal degrees to make calculations easier.

Ellipsoid WGS84  
 Datum WGS84, ETRS89  
 Kilometric grid UTM - Fusi 33

MAGNETIC DECLINATION AND GRID CONVERGENCE AT CENTER OF MAP  
 X = 850000, Y = 5154000 (1<sup>st</sup> OF JANUARY 2017)

$\delta = +3.37^\circ$   
 $\gamma = -1.05^\circ$   
 $\delta - \gamma = 4.42^\circ$

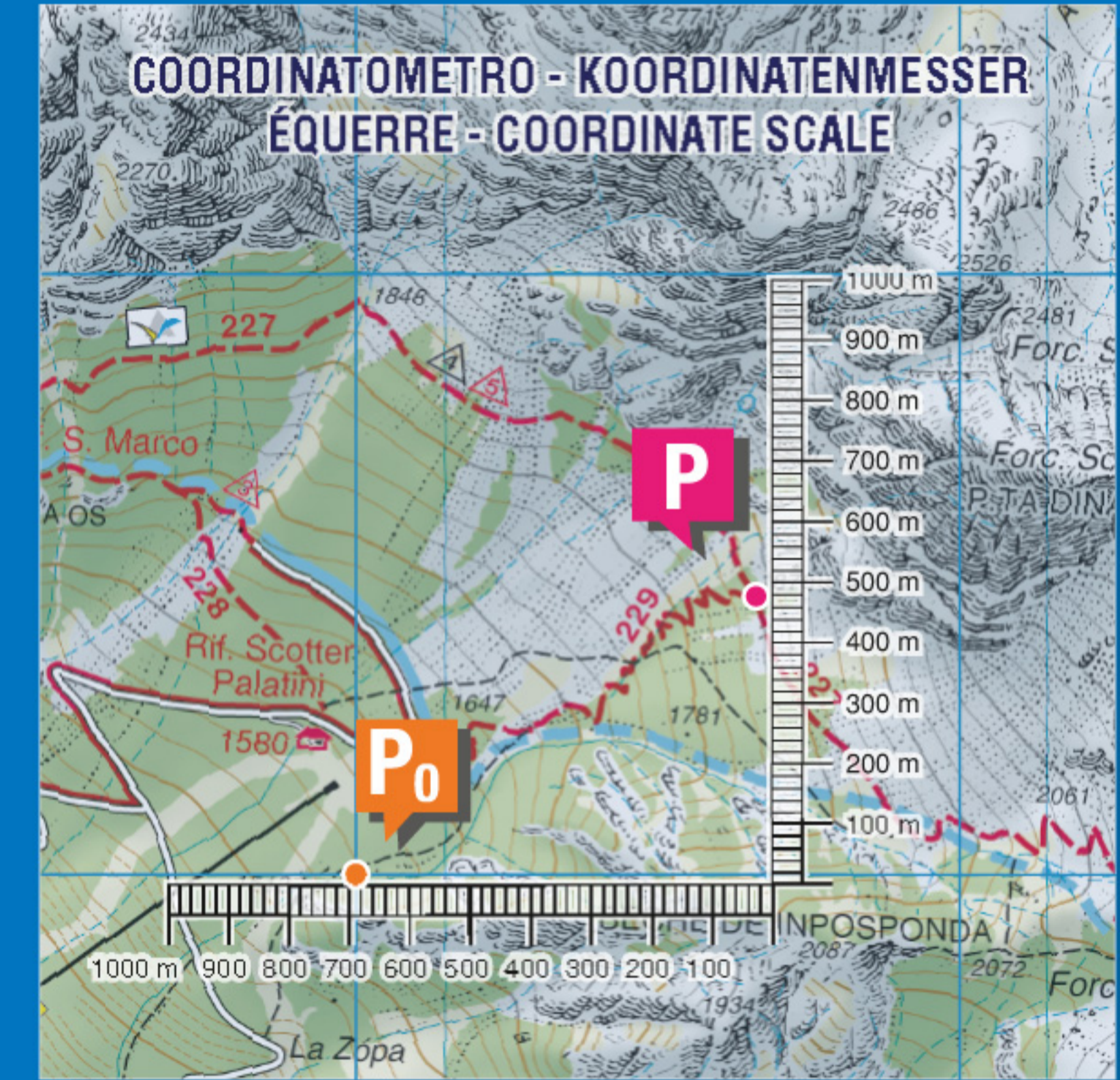
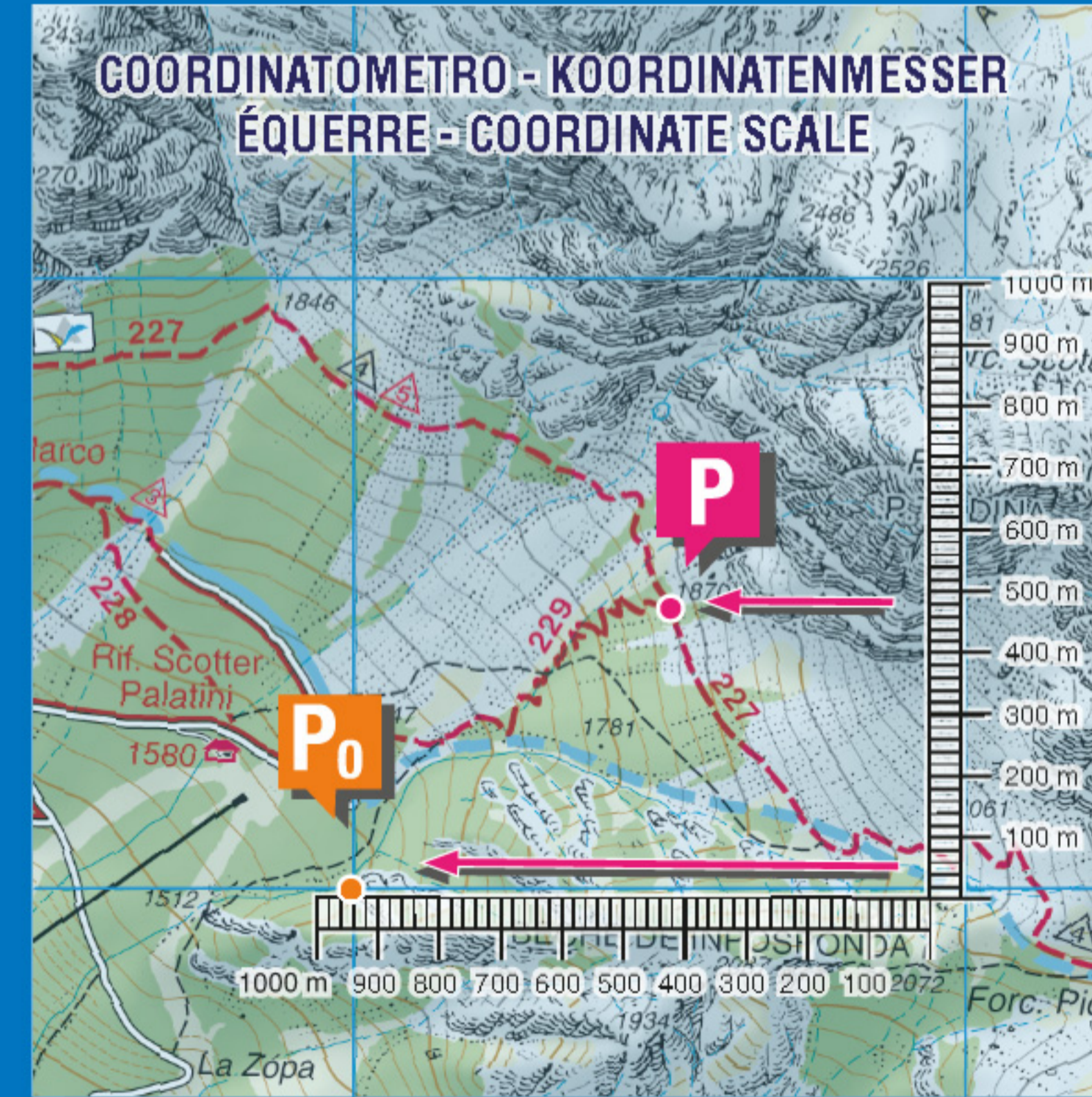
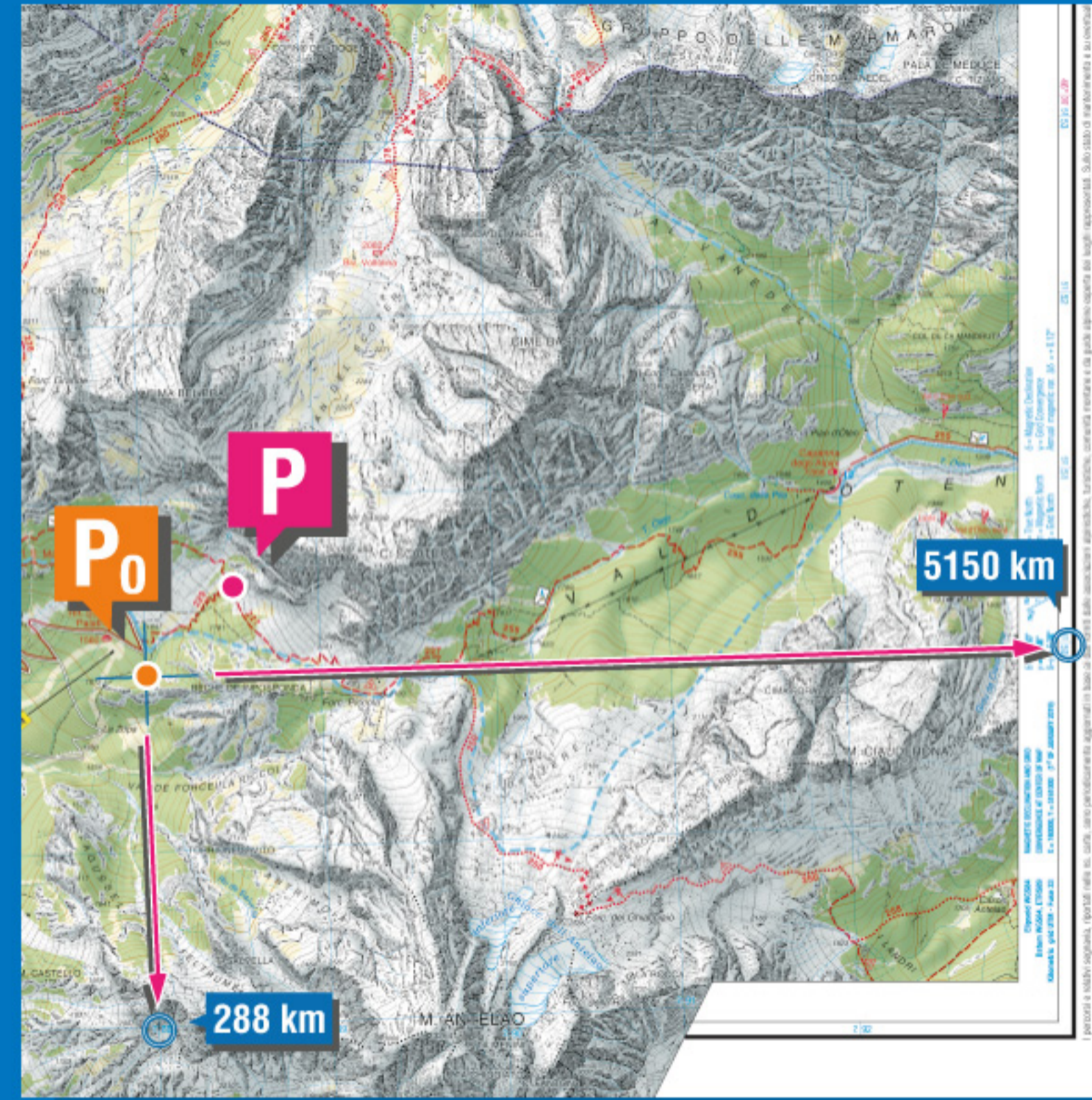


N = True North  
 Nm = Magnetic North  
 Ng = Grid North

$\delta$  = Magnetic Declination  
 $\gamma$  = Grid Convergence  
 Annual magnetic var.  $\Delta\delta = + 0.12^\circ$

## GEBRAUCH DES KOORDINATENMESSERS

Bestimmung der UTM-Koordinaten (WGS84)  
eines Punktes P auf der Karte



1

Punkt P auf der Karte ermitteln, von dem man die Koordinaten bestimmen möchte, und den Punkt P<sub>0</sub>, linker unterer Scheitelpunkt im Gitterquadrat, in dem sich der Punkt P befindet.

2

Am Kartenrand die kilometrischen Koordinaten der Karte von Punkt P<sub>0</sub> ablesen:

$$E(x) = 288,000 \text{ km}$$

$$N(y) = 5150,000 \text{ km}$$

3

Koordinatenmesser (auf der transparenten Kartenhülle aufgedruckt) mit der Grundlinie auf der Grundlinie des Gitterquadrates auflegen, in dem sich der Punkt P befindet, und nach links verschieben ohne die Ausrichtung zu verändern, bis die senkrechte Linie des Koordinatenmessers den Punkt berührt, dessen Koordinaten wir bestimmen wollen.

4

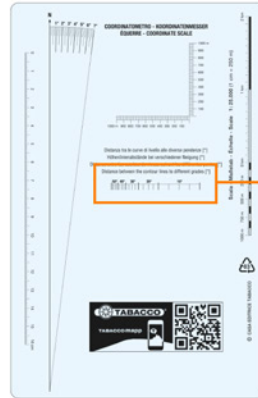
Die Werte in Metern der Koordinaten E (x) und N (y) von P im Vergleich mit Punkt P<sub>0</sub> messen (Hinweis: mit dem Koordinatenmesser kann der Abstand mit einer Abweichung von 10-20 m ermittelt werden).

Die UTM-Koordinaten von Punkt P sind daher:

$$(E) x = 288000 \text{ m} + 680 \text{ m} = 288680 \text{ m}$$

$$(N) y = 5150000 \text{ m} + 490 \text{ m} = 5150490 \text{ m}$$

## BEURTEILUNG DER HANGSTELTHEIT



Umschlag



1

Auf der topographischen Karte, senkrecht zu den Höhenlinien, die auf der Kartenhülle aufgedruckte Skala im Bereich des Punktes auflegen, in dessen Umgebung die Hangneigung ermittelt werden soll.

2

Mithilfe der Skala den Abstand zwischen zwei nebeneinanderliegenden Haupthöhenlinien (100 m) schätzen und den entsprechenden Steilheitswert in Grad ablesen.

## INFORMATIONEN AM KARTENRAND

### Kartographisches System

Ellipsoid: WGS84  
 Geodätisches Datum: WGS84, ETRS 89  
 Kilometer-Gitter: UTM  
 UTM-Zonen: 32, 33

### Magnetische Deklination und Konvergenz des Gitters in Kartenmitte

N = geographisch Nord  
 Nm = magnetisch Nord  
 Ng = Gitternord  
 $\delta$  (delta) = magnetische Deklination  
 $\gamma$  (gamma) = Gitter-Konvergenz  
 $\Delta\delta$  = jährliche Veränderung der magnetischen Deklination

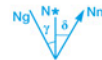
## AUSRICHTUNG DER KARTE

Am Kartenrand sind die Werte der magnetischen Deklination in Kartenmitte und der Winkel zwischen magnetisch Nord, Gitternord und geographisch Nord angegeben. Der Winkel zwischen Gitternord und magnetisch Nord ermöglicht eine präzise Ausrichtung der Karte mit dem Kompass und eine einfache Routenberechnung. Die Winkelwerte sind in Bogengraden angegeben, um die Berechnungen zu vereinfachen.

Ellipsoide WGS84  
 Sistema di riferimento WGS84, ETRS89  
 Reticolo chilometrico UTM - Fuso 33

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N = Nord Geografico  
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$\delta$  = Declinazione magnetica  
 $\gamma$  = Convergenza reticolo  
 $\Delta\delta$  annuale = + 0.12°