

# Review of avalanche balloon incidents in Tatra Mountains



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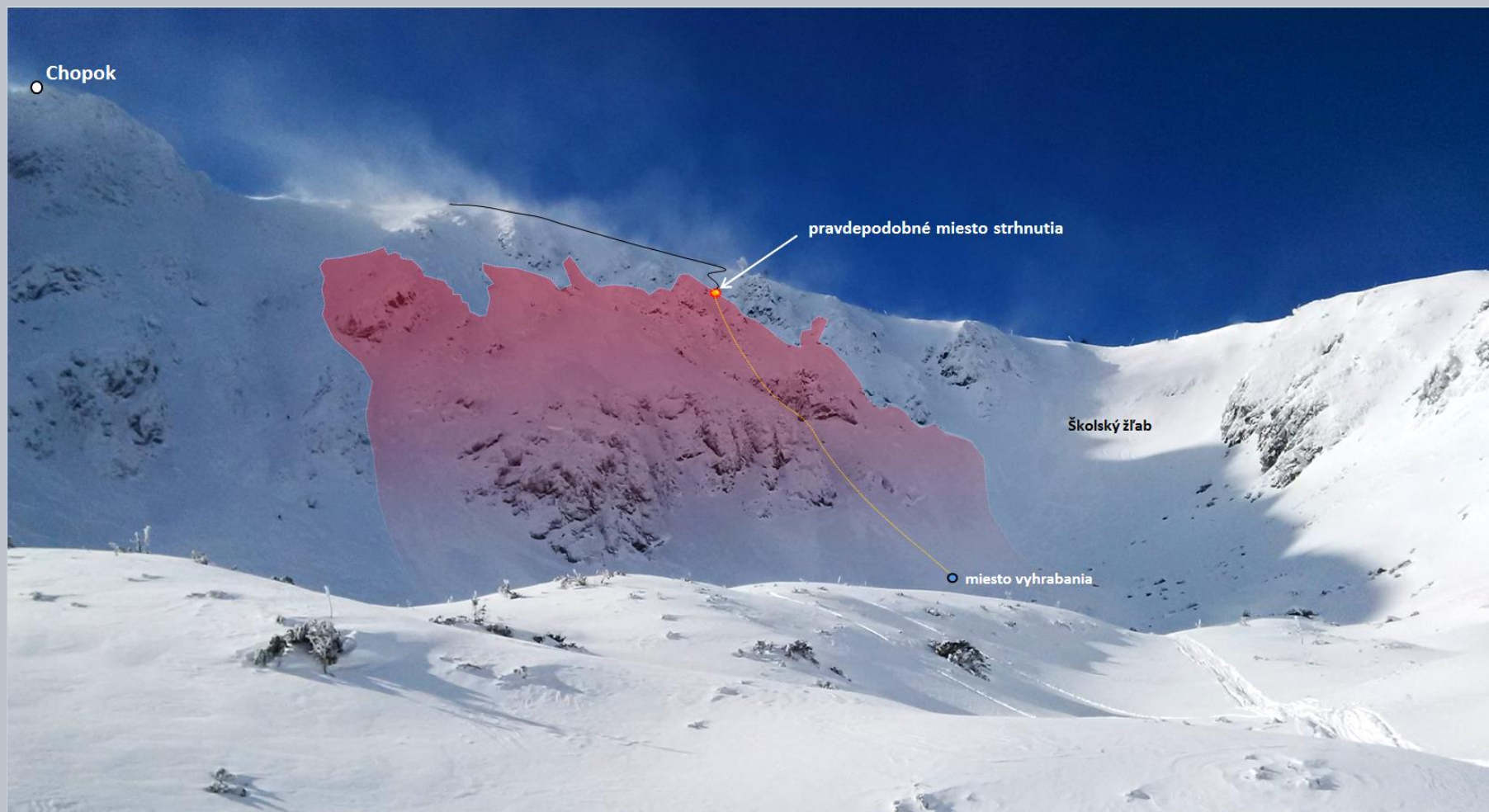
# Jasná – Avalanche balloon incident 31. 1. 2015



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# Jasná Avalanche balloon incident 31. 1. 2015



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# Jasná Avalanche baloon incident 31. 1. 2015



- Deep full burial
- Hypothermia III (28,5°C)
- Patient unconscious
- Brain edema
- Major trauma
- 4.2.2015 exitus letalis



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# Jasná Avalanche baloon incident 1. 2. 2015





# Jasná Avalanche baloon incident 31. 1. 2015





# Jasná Avalanche baloon incident 31. 1. 2015





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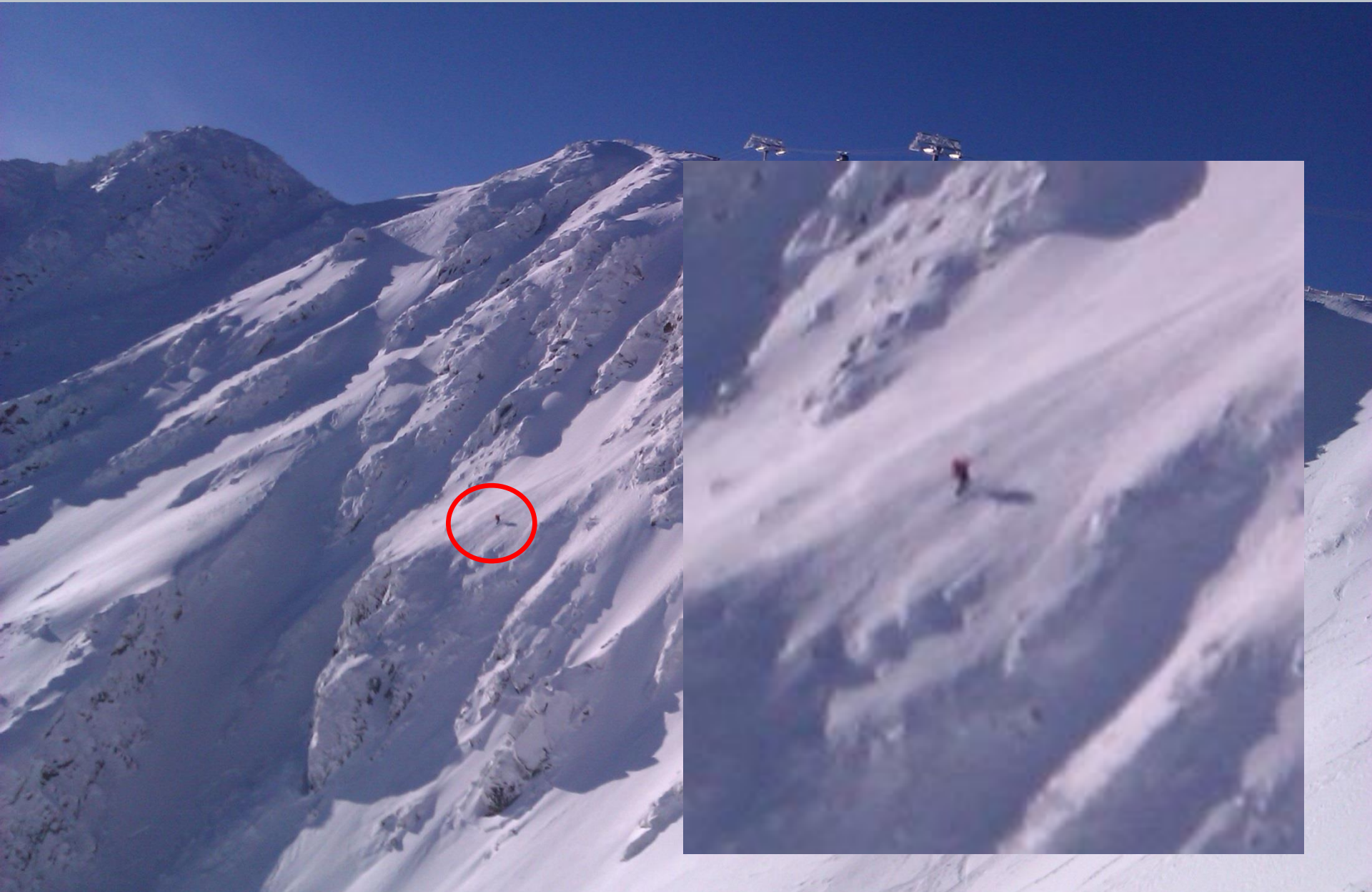


# Jasná Avalanche baloon incident 31. 1. 2015





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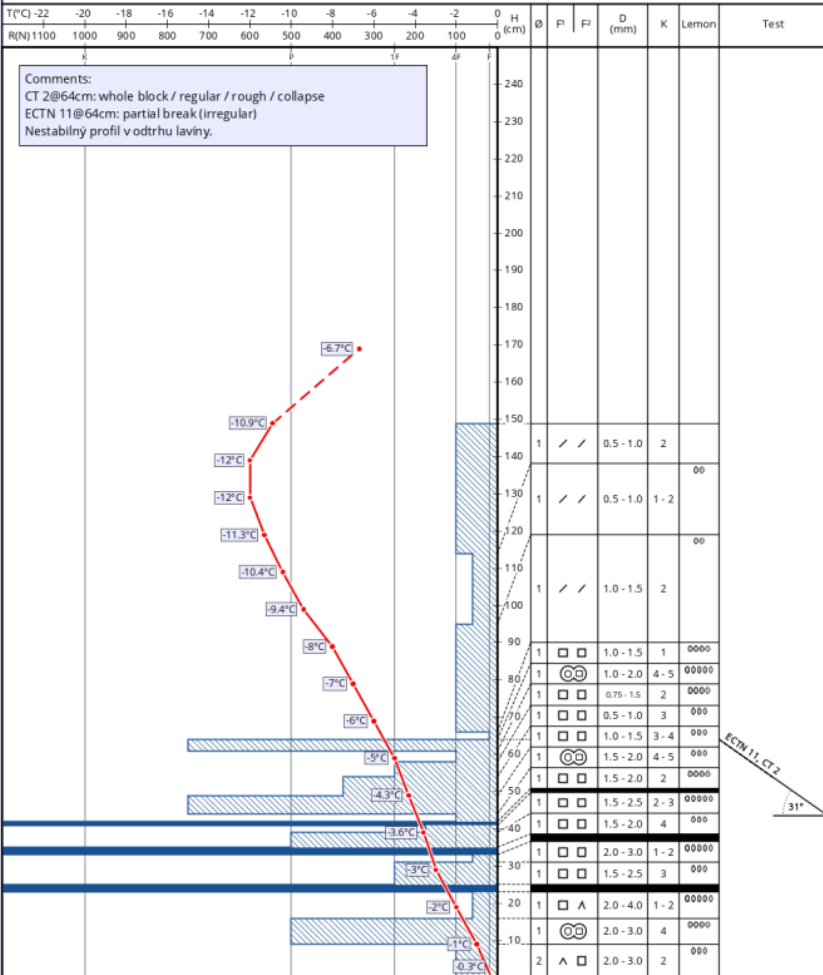


# Jasná Avalanche baloon incident 31. 1. 2015

## Snowprofile: Nízke Tatry- Chopok, nad Školským žlabom

Name: Biskupič, Kyzek	e-mail: slp@hzs.sk	Date: 01. Feb. 2015 10:30
Location: Nízke Tatry- Chopok, nad Školsk ...	Elevation: 1924 m	Air temperature: -6.7°C
Subregion: Slovensko	Incline: 31°	Precipitation: No precipitation
Region: Slovensko	Aspect: NE	Intensity:
Country: Slovensko	Wind speed: Gentle (< 20 km/h)	Sky condition: Clear (0/8)
Lat. / Long.: 48.946° / 19.5917°	Wind direction: SW	Profile: (Type)

+ Precip. particles    ● Rounded grains    A Depth hoar    ○ Melt forms    ☒ Faceted, rounded    ☉ Melt-freeze crust  
 / Decomp. / fragm.    □ Faceted crystals    V Surface hoar    ■ Ice formations    ☒ Graupel





# Jasná Avalanche balloon incident 31. 1. 2015

## Summary:



- Wrong judgement
- No expectation of triggering avalanche
- Did not managed to stop at the beginning



- Deployed avalanche balloon
- No hands in straps
- Best documented incident



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# RESUSCITATION

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*Haegeli et al.*  
*The effectiveness of avalanche*  
*airbags. Resuscitation 2014*

## AUTHOR GROUP:

Pascal Haegeli, Markus Falk,  
Emily Procter, Benjamin Zweifel, Frédéric Jarry, Spencer Logan,  
Kalle Kronholm, Marek Biskupič, Hermann Brugger



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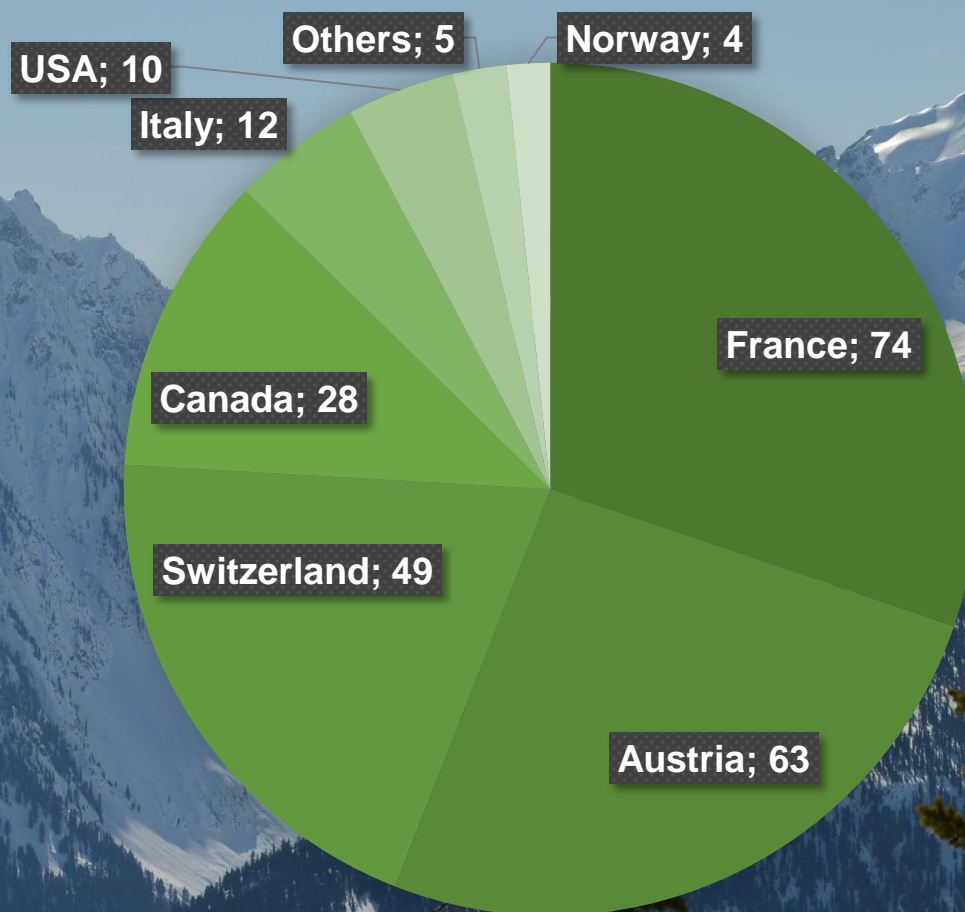
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# DATASET

424 victims (245 accidents)

1994-2012



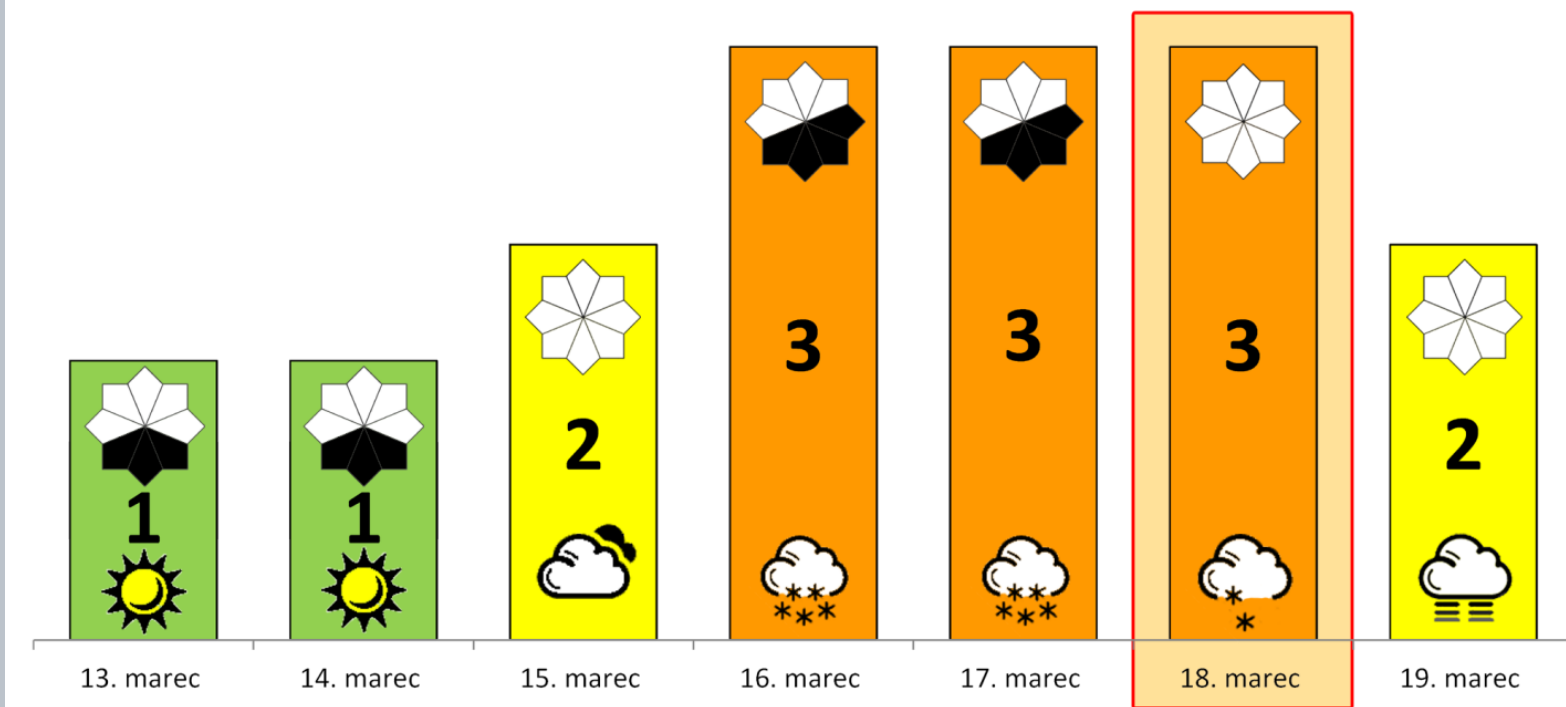
Source: E. Procter, The effectiveness of avalanche airbags



# Avalanche balloon incident 18. 3. 2014

## Vývoj stupňa lavínového nebezpečenstva

*Avalanche danger level*

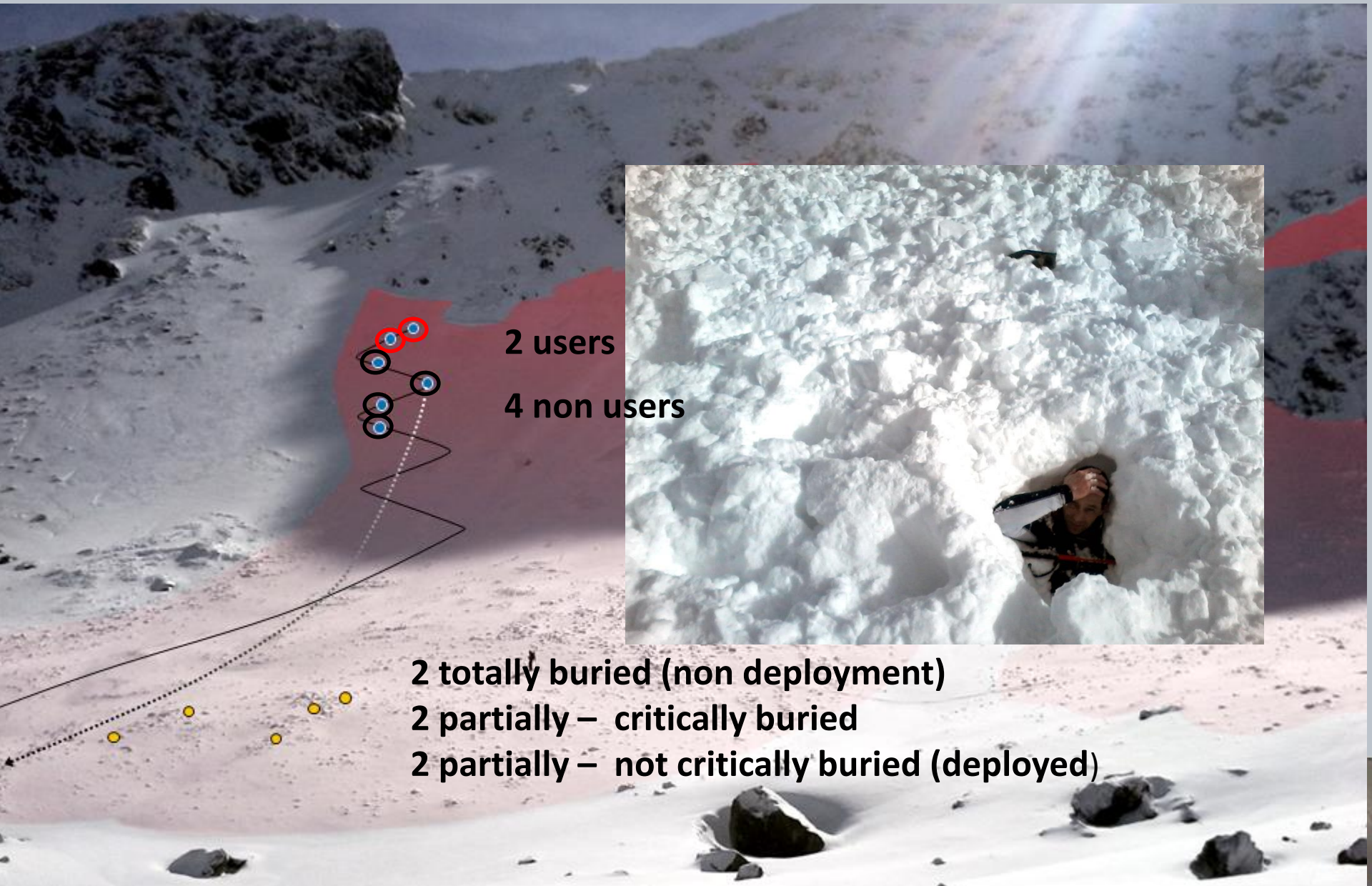


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# Avalanche balloon incident 18. 3. 2015



2 users

4 non users

2 totally buried (non deployment)

2 partially – critically buried

2 partially – not critically buried (deployed)

# Avalanche balloon statistics Tatra mountain

AnalysisIncluded	AnalysisReason	AccidentID	LocationLookUp	Professional	Beacon	BalloonBrand	BalloonType	BalloonUse	BalloonNonDeploy	LocWhenAvTrigger	BurialDegree	BalloonVisible	BurialDepth	InjuriesSummary
Yes		1	Vysoké Tatry, Mlynická dolina, Sedielko nad Skokom	No	Yes	Snowpulse	Mono	Deployed		Start zone	Above ground	Yes		None
Yes		2	Nízke Tatry, Dúbravská dolina	No	Yes	ABS	Dual	Deployed		Track	Partial - non critical	Yes		Major
Yes		3	Nízke Tatry, Dievčenský žľab	No	Yes	ABS	Dual	Deployed		Start zone	Partial - non critical	Yes		None
Yes		4	Nízke Tatry, Východný Derešský kotol	No	Yes	BCA	Mono	Deployed		Start zone	Partial - non critical	Yes		None
Yes		4	Nízke Tatry, Východný Derešský kotol	No	No			Not equipped		Start zone	Partial - non critical			None
Yes		5	Západné Tatry, Tmavá Spálená	Yes	Yes	Snowpulse	Mono	Deployed		Start zone	Above ground	Yes		None
Yes		5	Západné Tatry, Tmavá Spálená	Yes	Yes	Snowpulse	Mono	Not deployed	Zaistené tiahlo	Start zone	Full	No	0,1	None
Yes		5	Západné Tatry, Tmavá Spálená	No	No			Not equipped		Start zone	Partial - non critical			None
Yes		5	Západné Tatry, Tmavá Spálená	Yes	No			Not equipped		Start zone	Full		0,2	Minor
Yes		5	Západné Tatry, Tmavá Spálená	Yes	No			Not equipped		Start zone	Partial - critical		0,15	None
Yes		5	Západné Tatry, Tmavá Spálená	Yes	No			Not equipped		Start zone	Full		0,5	Minor
Yes		6	Nízke Tatry, Demänovská dolina, Lukovský kotol	No	Yes	Snowpulse	Mono	Deployed		Start zone	Full	No	1	Major
Yes		7	Nízke Tatry, Demänovská dolina, Lukovský kotol	No	Yes	ABS	Dual	Deployed		Start zone	Above ground	Yes		None
Yes		8	Vysoké Tatry, Malá Studená dolina, Baranie rohy	No	Yes	ABS	Dual	Deployed		Start zone	Partial - non critical	Yes		Minor
Yes		9	Nízke Tatry, Demänovská dolina, Lukovský kotol	No	Yes	Unknow		Deployed		Start zone	Above ground	Yes		Major

Season	LocationInternal	GroupActivity	ComProf	TerrainChar	NumInvolveAll	InvolveBalloonYN	NumFatal	AvSize	SlabWidth
2011/2012	Vysoké Tatry, Mlynická dolina, Sedielko nad Skokom	Backcountry skiing	No	Alpine	1	No	0	3	130
2012/2013	Nízke Tatry, Dúbravská dolina	Backcountry skiing - ascent	No	Alpine	1	No	0	2	50
2013/2014	Nízke Tatry, Dievčenský žľab	Freeriding	No	Alpine	1	No	0	2	5
2013/2014	Nízke Tatry, Východný Derešský kotol	Freeriding	No	Alpine	2	Yes	0	3	30
2013/2014	Západné Tatry, Tmavá Spálená	Backcountry skiing - ascent	Yes	Alpine	6	Yes	0	3	250
2014/2015	Nízke Tatry, Demänovská dolina, Lukovský kotol	Freeriding	No	Alpine	1	No	1	3	350
2014/2015	Nízke Tatry, Demänovská dolina, Lukovský kotol	Freeriding	Yes	Alpine	1	No	0	2	15
2015/2016	Vysoké Tatry, Malá Studená dolina, Baranie rohy	Backcountry skiing	No	Alpine	1	No	0	3	100
2015/2016	Nízke Tatry, Demänovská dolina, Lukovský kotol	Freeriding	No	Alpine	1	No	0	3	400

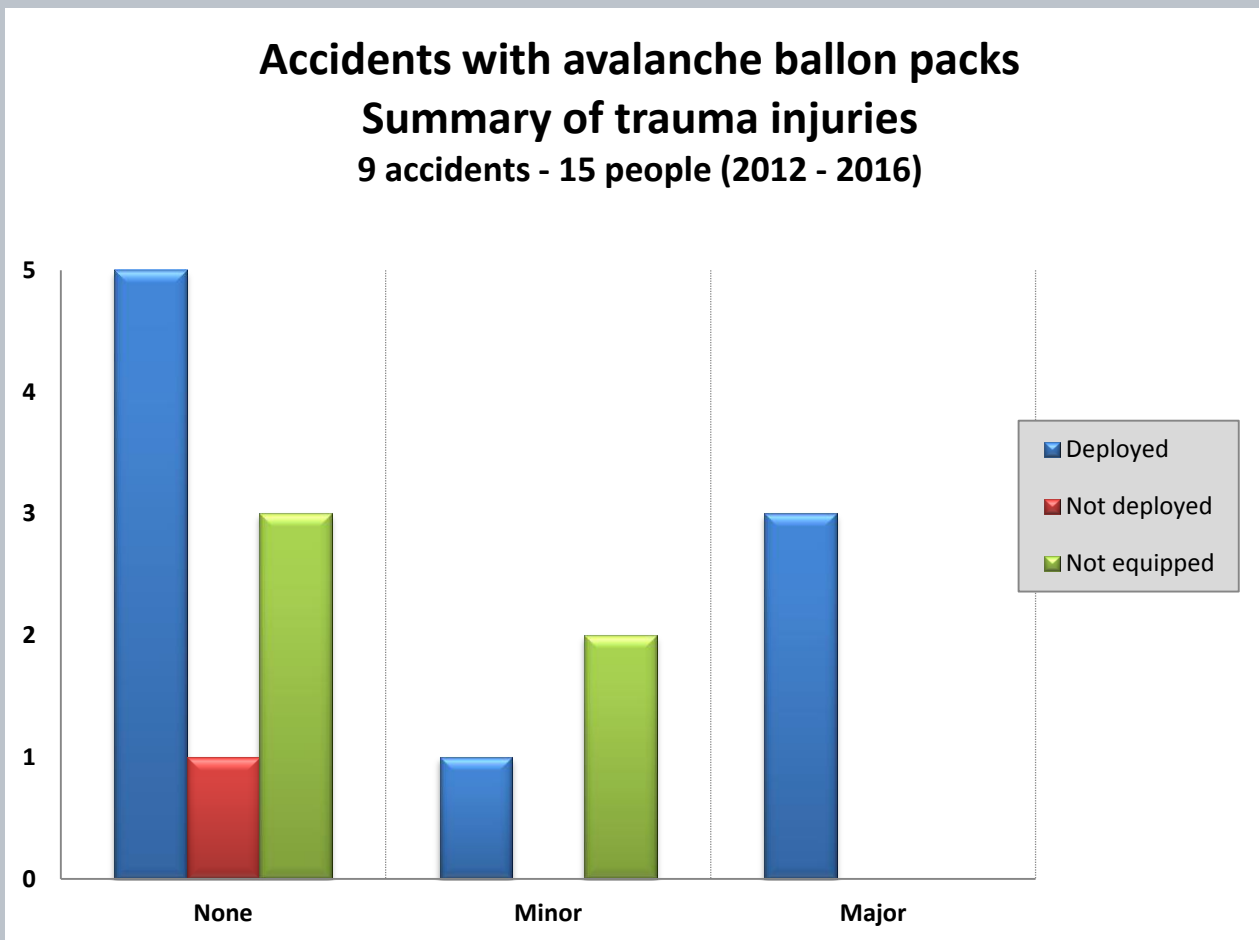


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# Avalanche balloon statistics Tatra mountain



# Avalanche balloon statistics Tatra mountain

- Increase of avalanche incidents with balloon pack users
- Necessary to collect data to periodically analyse the balloon pack performance



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