First the authors want to thank the anonymous Referee #1 for his/her review of the manuscript and for the constructive helpful comments. Find our comments and new text below each point intended with suggested additional or changed text in italics.

The paper presents a combination of well described and widely used methods, thus not really new.

In a revised version the authors must find a way to either completely focus on the novelty of their approach and methods or (recommended!) to show the reader the consequences of their findings. What can we learn from this study in order to better understand hill slope hydrology in general, where are the clear benefits of your approach compared to others, are your results valid for al mid hill regions (I doubt) etc.

> We understand that the novelty has not been presented clearly enough and revised the manuscript accordingly, giving more attention on the conclusions that can be drawn outside of the specific setting of our site for hillslope moisture dynamics in general.

5863/2 : : :.still uncommon. Really, I don't agree, there are many studies nowadays. You might need to further look into the literature.

> We agree that the use of ERT for mapping shallow subsurface structure und monitoring hydrological processes has been strongly developed in recent years. However, the use on hillslopes (in particular with layered structures) over a longer period (several month in almost weekly intervals) is still rare. Furthermore, most of the cited studies dea with controlled conditions (laboratory or irrigation) or only with a few time steps over a very long or very short period. The major aspect of the paper is (as also annotated by Referee #3) to show the robustness of ERT as long-term monitoring tool in the context of hillslope hydrology.
>
> In our opinion, the hillslope scale is the most important scale for predicting precipitation runoff response. Therefore it is crucial to know whether there is a spatial variability in the hydrological system on hillslopes or not. Many hypotheses of model are based on punctual measurements only. Punctual hydrometric measurement alone are not sufficient in case of significant spatial heterogeneity. However, with the use of a multi-method approach as presented in our paper, it is possible to transfer hydrometric data to higher spatial scales

and to obtain additional patterns of soil water saturation distribution and its dynamics on a hillslope.

Now we are aware, that the objectives of the paper have not been formulated very clearly. In a revised version we rework and specify the objectives and the conclusions.

As large parts of the study site show complete saturation as indicated in figure 8, the question arises if hill slope moisture dynamic addresses this issue correctly. I suggest adapting the title.

Yes, parts of the study site show complete saturation. The aim was to show some valuable information about the subsurface water distribution, which are not comprehensible in this spatial resolution with percussion drilling or hydrometric data. It is also right that these saturated parts show almost no dynamics during the investigation period. However, these parts are restricted to deeper areas and the dynamics we are talking about is situated above the local ground water. All data and results in the “Monitoring” section show a clear dynamics during the year. This is what is meant by dynamic in the title and the major part of the paper. We therefore kept the title as is.

The material and methods section can be restructured. It is not clear why 2.2 (Hydrometrical equipment) describes sampling frequency? It is not fully clear why hydrometry is not under monitoring since the authors take measurements since years

Thank for this suggestion. The material and methods section are restructured. Hydrometric Equipment is renamed to Hydrometric Monitoring and moved to the Monitoring section.

5860/1 … are one of the basic units: : : which ones else?

Sentence rewritten:
Besides floodplains, hillslopes are one of the basic units that mainly control water movement and flow pathways within catchments of subdued mountain range.

5861/22 : : :.influence in which way? Unclear

The paragraph is rewritten:
In catchments of Central European subdued mountain range, the shallow subsurface of hillslopes is mostly covered by Pleistocene periglacial slope deposits (Kleber and Terhorst, 2013). These slope deposits have developed in different layers. In literature normally three

layers are classified (Upper Layer – LH, Intermediate layer – LM, Basal Layer – LB: classification according to ad-hoc AG-Boden, 2005; Kleber and Terhorst, 2013). Sometimes locally a 4th layer ("Oberlage" ad-hoc AG-Boden, 2005) could be found. The occurrence of these layers can vary spatially and has different regional and local characteristics. Due to the sedimentological and substrate-specific properties, e.g. grain-size distribution, clast content, and texture, they remarkably influence near-surface water balance (e.g. infiltration, percolation) and are of particular importance for near-surface runoff, e.g. interflow (Chifflard et al., 2008; Kleber, 2004; Kleber and Schellenberger, 1998; Sauer et al., 2001; Scholten, 1999; Völkel et al., 2002a, b; Heller, 2012; Moldenhauer et al., 2013).

5861/18 Ad-hoc discusses a 4th late Pleistocene layer – do you have it in the studysite?

No, we don't have it on our study site. We added e short explanation:
5863/18 *… (LH, LM, LB, with no occurrence of the "Oberlage")*

5861/19 it might be important to know the LB often contains multiple layers!

Correct, but as long as those layers do not have different hydraulic properties, the multiple layering will not have significant influence.
We did not mentioned this fact, because it is a very specific case and we don't have multiple layered LB on the study site.

5862/8 Hydrogeophysical: Aren't these geophysical methods applied in Hydrology?
Hydrogeophysics uses hydrological, geophysical or sedimentological methods.

Totally agree: Hydrogeophysics involves use of geophysical measurements for estimating parameters and monitoring processes that are important to hydrological studies, such as those associated with water resources, contaminant transport, ecological and climate investigations (AGU Hydrogeophysics Committee 2014: http://www.hydrogeophysics.org/).

5863/3 : : :non-invasive: : :.. no, it is invasive but at a low level. Your electrodes punch the surface, in Archaeology for example this would be severe!

The term is changed to: *minimally invasive*

5863/12 : : :approx. 7: : :. Be precise a mean slope angle doesn't tell the reader anything! Also do you mean average?

Sentence rewritten: *The slope angle ranges from 0.05 to 22.5° with an average of 7°.*

5863/19 : : :.low bulk density: : :.. be precise, avoid low/high, as compared to an Andosol a bulk density of 1.2 g/cm3 would be high.

The correct value from the table is added to the text:

The upper layer (LH) with a thickness of 0.3 to 0.65 m consists of silty-loamy material with a bulk density of 1.2 g/cm³ and many roots (cf. Table 1).

5863/23 : : :.parallel to the slope. In which way? Long axis along or across the slope (both is parallel)

Sentence rewritten:
The ubiquitous sandy-loamy basal layer (LB) is characterized by even higher bulk density and longitudinal axes of coarse clasts oriented parallel to the slope.

5864/8 : : :.resistivity: : : I suggest you should use the terms apparent/specific ELECTRIC resistivity, just as you do in line 14 on page 5864.

We add an explanation on the first use that in this context resistivity always refers to electrical resistivity as there is no other (e.g. mechanical) involved in the study.

5865/5 how was the saturation achieved, from below by suction or from above by infiltration? Also the gravel content is >50% in LB, how could this fit in a 3.6 cm diameter tube, LBs in igneous rocks often tend to have be larger stones incorporated? Could this be a major fact for some of the later observed variability?

Added: *The saturation was done successively by stepwise injection in the middle of the soil core to achieve a better moisture distribution within the sample.*

We are aware that the size of the tube might be a problem. But when comparing the ERT water contents with water content from the ThetaProbes (cf. Figure 12), the results show similar values for all depth (LH, LM and LB). Therefore we assume that samples represent the relationship in acceptable accuracy.

5866/11 Because: : :.. why because? Unclear (did you test or assume?). Often roots trace the depth of the layers very nicely. The question is do you have a high enough spatial resolution in your survey. A 1 m spacing does not give you a 10-20 cm vertical resolution as you want to resolve the LH and LM. Please indicate the vertical resolution of your arrays and settings.

Of course the size of resolveable lateral heterogeneities (e.g. by roots or clasts) are limited by the electrode spacing, however improved by combining Wenner alpha and beta arrays. Since timelapse inversion schemes are used (i.e. changes are regularized), anomalies in the baseline model will hardly appear in the temporal changes. Vertical resolution is well below electrode spacing, particularly in sight of the good data quality, and the ambiguity in the inversion does not affect the main findings, e.g. on the different types of precipitation event.

We improve the discussion regarding resolution properties.

5867/3 15cm deep electrodes will further reduce the vert. resolution on the top a lot! In theory you should a point on the surface.

By simulating real electrode sizes, Rücker and Günther (2011, Table 1) showed that the effects of the used electrode is very low (1-2%) and thus within measurement accuracy. Furthermore, the remaining effects will mainly cancel out in timelapse (difference) inversion.

5967/22 use (i), (ii), (iii)

Done.

5868/1ff contact resistance wasn't measured, why? Could this influence the data?

The contact resistance was checked, right before each single measurement.

We add a sentence: *Contact resistivity were in the range of 0.2 to max. 1 k*Ω*.*

As shown by Rücker and Günther (2011, Fig. 5), the effect is (i) negligible and systematic for all measurements thus having no influence on the dynamic results.

5869/10 so there is no influence of a frozen LH during winter?

The soil temperature was always above 0° from May to December.

5869/27 : : :may not be differentiated: : :. But it could be also due to the too low vertical resolution of your survey design?

In this context we are talking about laboratory measurements. Because of the similar material properties it is difficult to differentiate these two layers. With similar material properties it would be only possible to see a difference within the ERT data, if the water contents were different.

5870/19 : : :may vary. To what extent?

cf. 0.3 m: n_θ ranges from 0.33 to 0.58 and F_θ from 1.9 to 2.3
cf. 1.3-1.4 m: n_θ ranges from 0.35 to 0.36 and F_θ from 1.62 to 1.66

The mean squared error for ρ_{eff}/ρ_w is also higher within the first depth range: $MSE_{<0.9m}$=2.8 and $MSE_{>0.9m}$=1.4

5871/20 would this also be the case with a higher resolution in your survey design?

The results would be the same, but maybe the boundary could be located more precisely.

5872/11 the reader wants to see a detailed 3D map of the layers in order be able to judge this statement.

We don't have a 3D map of the layers, but see profile section in Figure 1, near the spring the LB exceeds 3.5 m.

5874/2 you don't have a 0.2 cm resolution!!! Be careful

Due to the higher vertical resolution (Roy and Apparao, 1971; Dahlin and Zhou, 1994) and the combination of arrays we believe our resolution is sufficient to image the very shallow and localized resistivity changes (see also Descloitres et al., 2003). However we include a critical discussion on resolution limits.

5876/7 : : :infiltrates to the upper : : : what do you mean the upper layer (LB) or the upper part of the LB?

Yes, we mean the upper parts of LB. Sentence is rewritten.

5876 :remain low. Be precise what does it mean?

We mean they remain constant until the next time step. Sentence is rewritten.

5877/LB can't have electric characteristics only the sediments within LB.

Sentence is rewritten:
On the contrary, the sediments within LB have their own electrical characteristics.

5878/3 pedophysical: : :: : : is this the right term? You didn't talk about pedology yet about sediments. Earlier you used petrophysical – did you mean this?

We will change the term to pedo-/petrophysical, because both is right.
We are talking about sediments but these sediments are influenced by pedogenesis.

5878/4 did you really derive a method?

Sentence is rewritten:
Moreover, from the results of field measurements and parameter determination in the laboratory we are able to monitor seasonal changes in subsurface resistivity and its relationship to precipitation and soil moisture on the hillslope scale with a minimally invasive method directly.

Table 1 bulk density can't be in % must be g/cm3 ? Need to know the number of samples used to develop this table (assume it was not only 1 sample?)

The unit is changed.
Number of samples (n) will be added (*n >15 per layer*).

Table 2 same as for table 1 "n" needed

Number of samples (n) will be added (*n > 11 per sampling depth*)

Table 3 need explanation of F_θ and n_θ in caption

Text will be added to the caption: *water content formation factor F and water content exponent n.*

Figure 1 source of left fig? DEM? Need coordinated, Ger outlines not known to all readers, need explanation

Figures will be changed and coordinates, sources and explanations will be added

Additional references:

Rücker, C. and Günther, T.: The simulation of finite ERT electrodes using the complete electrode model, Geophysics, 76, 227–238, doi:10.1029/95WR02995, 2011.