in *C. fasciculata* than in *Leishmania* spp. Second, as *L. major* and *L. infantum* promastigotes are able to agglutinate with peanut lectin (PNA) and non-agglutinating parasites are more infective, the PNA agglutination properties were evaluated in *C. fasciculata,* what revealed that choanomastigotes of *C. fasciculata* are able to agglutinate with PNA and a non-agglutinating subpopulation can also be isolated. Consequently, the behavior in the presence of the lectin is similar. Finally, proteome analysis has revealed substantial differences in abundance of proteins involved in catabolism, redox homeostasis, intracellular signalling, and gene expression regulation. Logarithmic phase choanomastigotes of *C. fasciculata* over-express CACK, enzymes involved in redox homeostasis (TDR1, TryP, catalase and Fe-SOD), the translation factors eIF5a, EF1β and EF2 and most of the glycolytic enzymes catalyzing irreversible reactions and the enzymes of the non-oxidative phase of the pentose-phosphate pathway. The abundance of the translation factors (EF1α instead of EF1β) and of the enzymes involved in redox homeostasis (TryR instead of TDR1) increases again in the PNA$^-$ subpopulation, as a difference with *L. infantum*. These changes in abundance may have a role in growth in the nutrient rich environment at the logarithmic phase and a role in differentiation in the minor PNA$^-$ subpopulation within the population in stationary phase.
DISCLOSURE Nothing to disclose.

PS1.136
Spatial analysis of malaria distribution in the Union of Comoros

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BACKGROUND Malaria remains endemic in Comoros. In 2006, malaria was the leading cause of mortality, morbidity and consultation in hospitals. The Government of the Union of the Comoros is committed in the fight against malaria through the establishment of a National Strategic Plan in 2007 that was later updated for the period 2012–2016. The results of these efforts show that the disease is in a pre-elimination phase. Despite a clear decline of malaria several aspects of its epidemiology should be clarified including the identification of endemic areas.
METHODS Monthly cases, as reported by the 'Programme National de lutte Contre le paludisme' (PNLP) from 2010 to 2014, were geo-referenced in each island at the sanitary district level. The incidence of malaria by district was calculated using population data from the National Census. We completed the spatial database with data on environmental and social factors including meteorology, physical geography, land use (analyzed by remote sensing of SPOT 5 satellite images), population characteristics, and health care facilities. We performed statistical analyzes to show the relationships between the variables and the prevalence of malaria.
RESULTS The mapping of malaria incidence between 2010 and 2014 shows its heterogeneity among the 17 sanitary districts. Five districts (Hambou, Centre, Fomboni, Mutsamudu and Pomoni) reveal a high endemicity. Also we have highlighted the spatial relationships between malaria incidences and environmental and socio-demographic variables.
CONCLUSION This work is the first spatial analysis of the epidemiology of malaria in Comoros. It contributes to a better understanding of the spatial dynamics of malaria to help the Ministry of Health to eradicate malaria by 2016.
KEYWORDS malaria; incidence; spatial analysis; GIS; Union of Comoros.
DISCLOSURE Nothing to disclose.

PS1.137
Systematized review on spatial analysis of environmental risk factors of malaria transmission

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Malaria is still the major parasitic disease in the world, with approximately 600 000 deaths in 2013. Environmental risk factors of malaria have been widely studied, however, there are discrepancies on the results about their influence on malaria transmission. Recently, manuscripts have been published about spatial analysis of environmental risk factors of malaria, in order to explain why malaria varies from place to place. Our primary objective was to identify the environmental variables most used in the spatial analysis of risk factors of malaria. The secondary objective was to identify geo-analytic methods and techniques, as well as geo-analytic statistics commonly related to environmental risk factors and malaria. To assess the current state of knowledge, we conducted a systematized review of articles published from January 2004 to March 2015, within Web of Science, Pubmed and Scielo databases. Initially 676 articles were found in these databases, after inclusion and exclusion criteria, were selected 41 manuscripts. Among these selected studies, precipitation, vegetation and temperature were the most frequent variables related to malaria, among others. As for geo-analytic methods, Bayesian geostatistical models were the most applied. On the other hand, Kriging interpolations, as well as Kulldorff's spatial scan, were the techniques more widely used. The main objective of many studies was to use these methods and techniques to create risk maps, showing their importance. In recent years, spatial analysis performed with satellite images and geo-referenced data are increasing in relevance due to the use of remote sensing and Geographic Information System (GIS). The combination of these new technologies identifies more accurately environmental risk factors, and the use of Bayesian geostatistical models allows a wide diffusion of malaria risk maps. It is known that precipitation, temperature and vegetation play a critical role in malaria transmission; however, other environmental risk factors have also been identified. Risk maps have a tremendous potential to enhance the effectiveness of malaria-control programs.
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PS1.138
Land use, an environmental risk factor for very high malaria transmission

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INTRODUCTION The goal of the study was to investigate if local agricultural practices have an impact on malaria transmission in four villages located in the same geographical area within a radius of 15 kilometers in southern Benin. Among